TOSHIBA

SERVICE MANUAL

This model is classified as a green product (*1), as indicated by the underlined serial number. This Service Manual describes replacement parts for the green product. When repairing this green product, use the part(s) described in this manual and lead-free solder (*2).
For (*1) and (*2), refer to **GREEN PRODUCT PROCUREMENT** and **LEAD-FREE SOLDER**.

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GREEN PRODUCT PROCUREMENT

The EC is actively promoting the WEEE & RoHS Directives that define standards for recycling and reuse of Waste Electrical and Electronic Equipment and for the Restriction of the use of certain Hazardous Substances. From July 1, 2006, the RoHS Directive will prohibit any marketing of new products containing the restricted substances.

Increasing attention is given to issues related to the global environmental. Toshiba Corporation recognizes environmental protection as a key management tasks, and is doing its utmost to enhance and improve the quality and scope of its environmental activities. In line with this, Toshiba proactively promotes Green Procurement, and seeks to purchase and use products, parts and materials that have low environmental impacts.

Green procurement of parts is not only confined to manufacture. The same green parts used in manufacture must also be used as replacement parts.

LEAD-FREE SOLDER

This product is manufactured using lead-free solder as a part of a movement within the consumer products industry at large to be environmentally responsible. Lead-free solder must be used in the servicing and repair of this product.

WARNING: This product is manufactured using lead free solder.
DO NOT USE LEAD BASED SOLDER TO REPAIR THIS PRODUCT!

The melting temperature of lead-free solder is higher than that of leaded solder by 86ºF to 104ºF (30ºC to 40ºC). Use of a soldering iron designed for lead-based solders to repair product made with lead-free solder may result in damage to the component and or PCB being soldered. Great care should be made to ensure high-quality soldering when servicing this product especially when soldering large components, through-hole pins, and on PCBs as the level of heat required to melt lead-free solder is high.

IMPORTANT NOTICE

WARNING:

You are requested that you shall not modify or alter the information or data provided herein without prior written consent by Toshiba. Toshiba shall not be liable to anybody for any damages, losses, expenses or costs, if any, incurred in connection with or as a result of such modification or alteration.

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IMPORTANT NOTICE

User's Guide

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Install Autodesk DWF Viewer

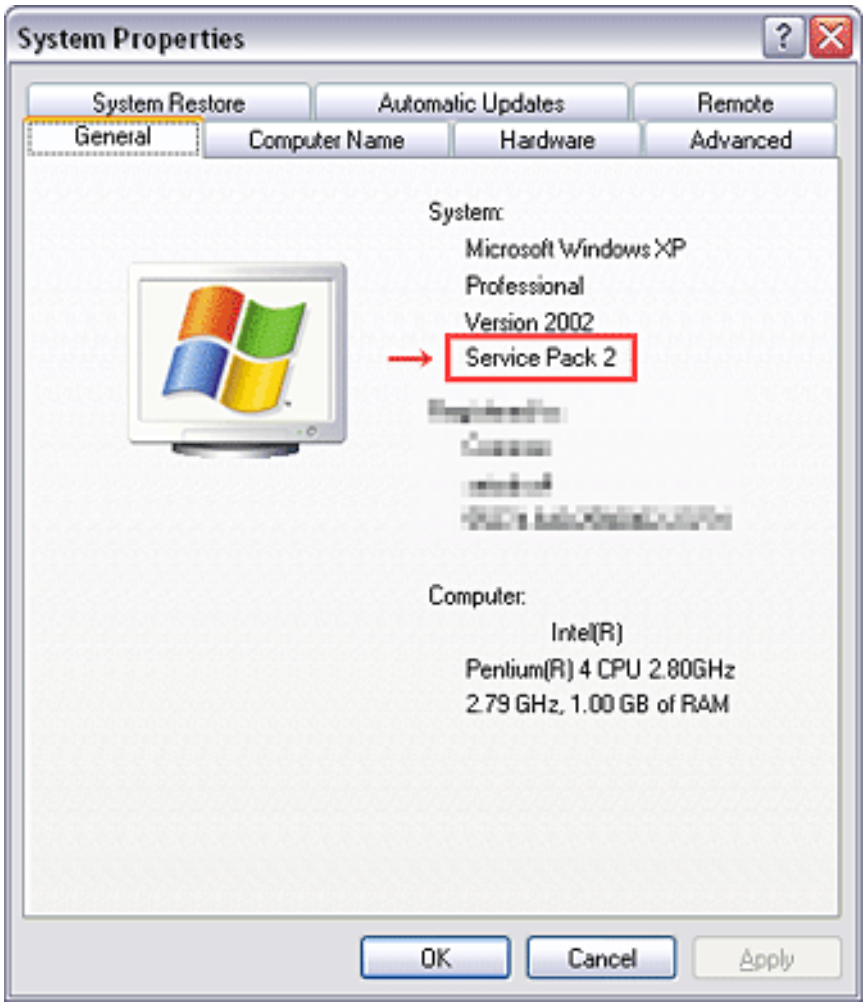
Autodesk DWF Viewer is necessary to view drawings and to activate the functions of this system. Please download and install.

Internet Explorer Settings

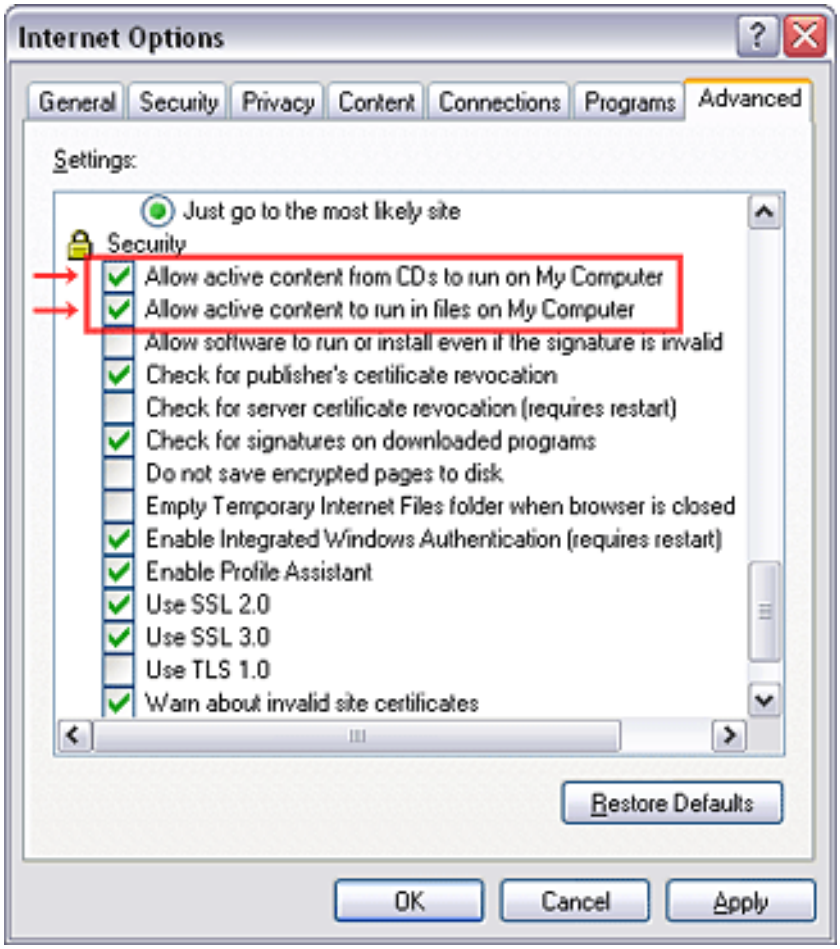
When **Windows XP SP2** or **Windows Vista** is used, ActiveX control and pop-up windows are limited

by the enhanced security function and this system may not work. In that case, perform the Internet Explorer setting using the following procedure to restore normal operation.

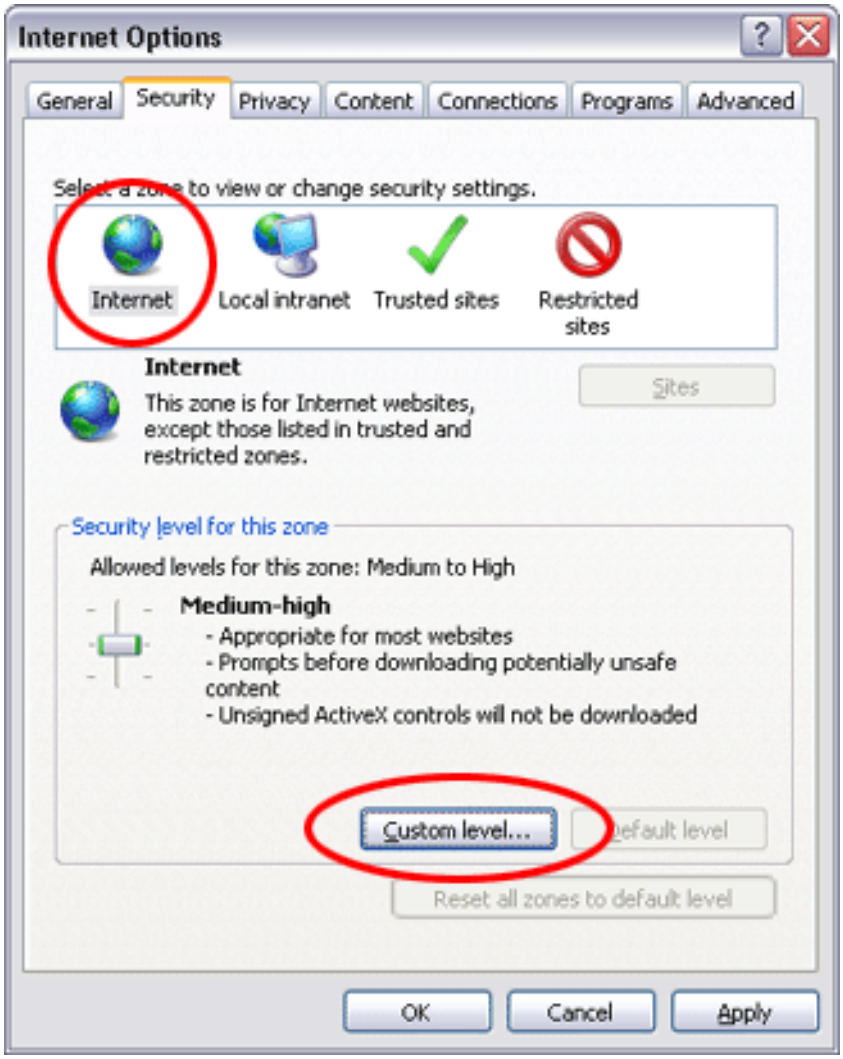
1. Windows version check
   [My Computer (right-click)] - [Properties]

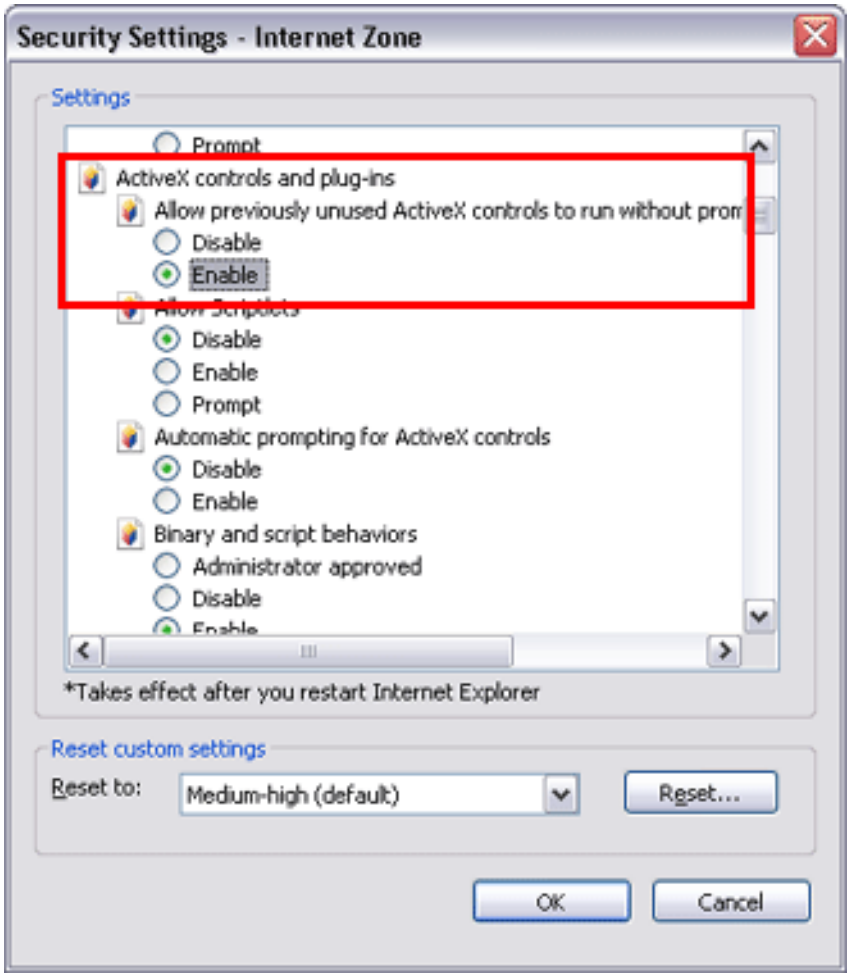


2. Internet Explorer setting
   [Tools] - [Internet Options]

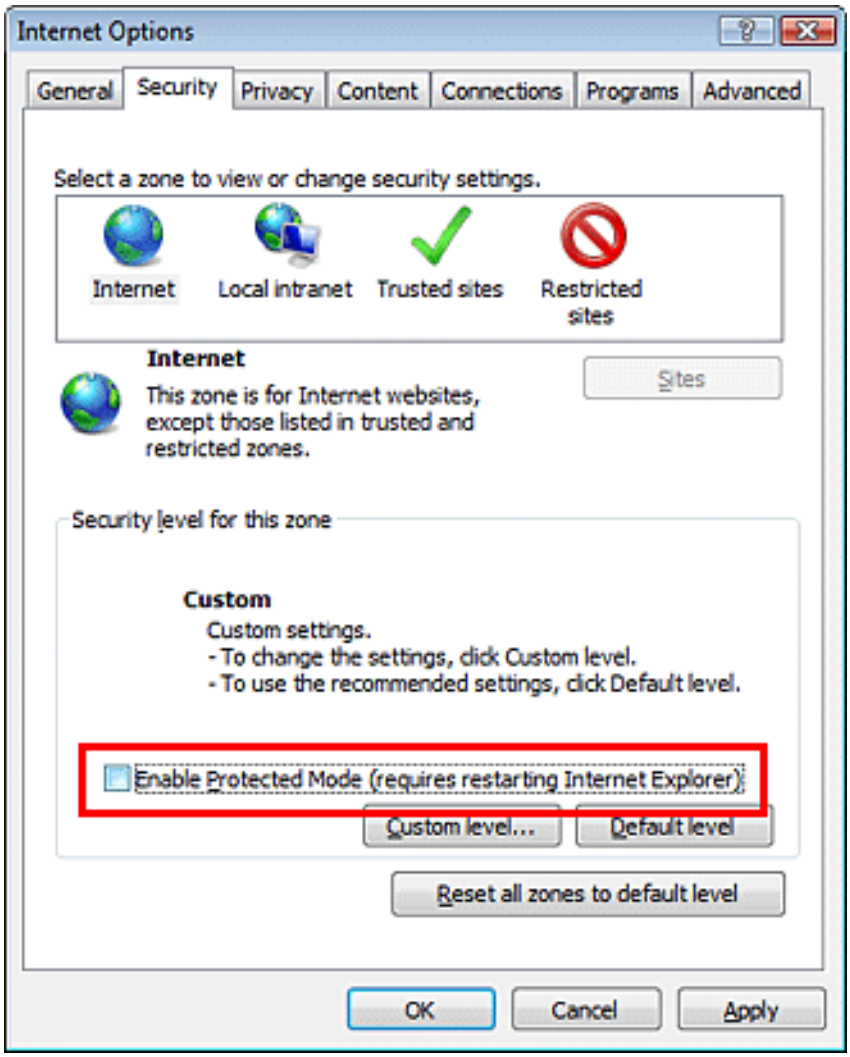


for Internet Explorer 7


Internet Options
General
Security
Privacy
Content
Connections
Programs
Advanced
Select a zone to view or change security settings.
Internet
Local intranet
Trusted sites
Restricted sites
Internet
This zone is for Internet websites, except those listed in trusted and restricted zones.
Sites
Security level for this zone
Allowed levels for this zone: Medium to High
Medium-high
- Appropriate for most websites
- Prompts before downloading potentially unsafe content
- Unsigned ActiveX controls will not be downloaded
Custom level...
Default level
Reset all zones to default level
OK
Cancel
Apply


Security Settings - Internet Zone
Settings
Prompt
ActiveX controls and plug-ins
Allow previously unused ActiveX controls to run without prom
Disable
Enable
Disable
Enable
Prompt
Automatic prompting for ActiveX controls
Disable
Enable
Binary and script behaviors
Administrator approved
Disable
*Takes effect after you restart Internet Explorer
Reset custom settings
Reset to:
Medium-high (default)
Reset...
OK
Cancel

for Windows Vista



Operating Environment

PC	:	Pentium III or higher recommended
Monitor	:	1024 x 768 or higher resolution recommended
Mouse	:	A mouse with wheel recommended
OS	:	Microsoft Windows 2000 SP4 / XP / Vista
Browser	:	Microsoft Internet Explorer 6.0 / 7.0
Drawing viewer	:	Autodesk DWF Viewer 6

* Use the software following respective license terms and conditions.

Functions Provided on Each Drawing Page

Parts Information Reference Function

When the character string of a part on the drawing is clicked, its information is popped up at the location. You can get any parts information immediately on the screen without referring to the maintenance parts list.

Parts Search Function

You can search any part within the displayed drawing or within the whole schematic diagram/board view by specifying a location number. The pop-up window displayed by clicking a part 's character string allows to search the part within the applicable schematic diagram, board view or spare parts list.

A circle appears when the part is found, showing the part's location within the drawing.

Signal Line/Connector Destination Display Function

When a name at the end of a signal line in a divided schematic diagram is clicked, the destination of the signal is searched and the display changes to the destination. Connecter destinations can also be searched in the same way.

When two or more search results are provided, their drawing names are displayed, allowing you to choose a desired drawing to display.

Layer Display Changing Function

When any of the color buttons on the toolbar is clicked, it can be selected to display desired layer in its color or not to display each layer. This allows you to see the pattern layer only by setting other layers to "non-display".

PC Board View Pattern Highlighting Function

When a pattern on a board view is clicked, it is highlighted in green. This allows easy pattern tracing.

Specified Area Printing Function

The Autodesk DWF Viewer enables to print the displayed drawing region as it is on a printer. It also allows to print a large-sized drawing in multiple pieces (tile printing).

Using with Network

Precaution

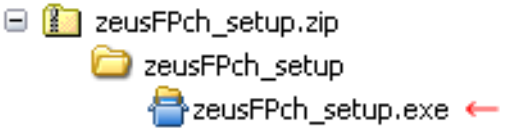
To use ZEUS Service Manual Ver.2 with network, the file-path names written on the source files of each ZEUS Engine Program Ver.2 and ZEUS Service Manual Ver.2 are to be modified.

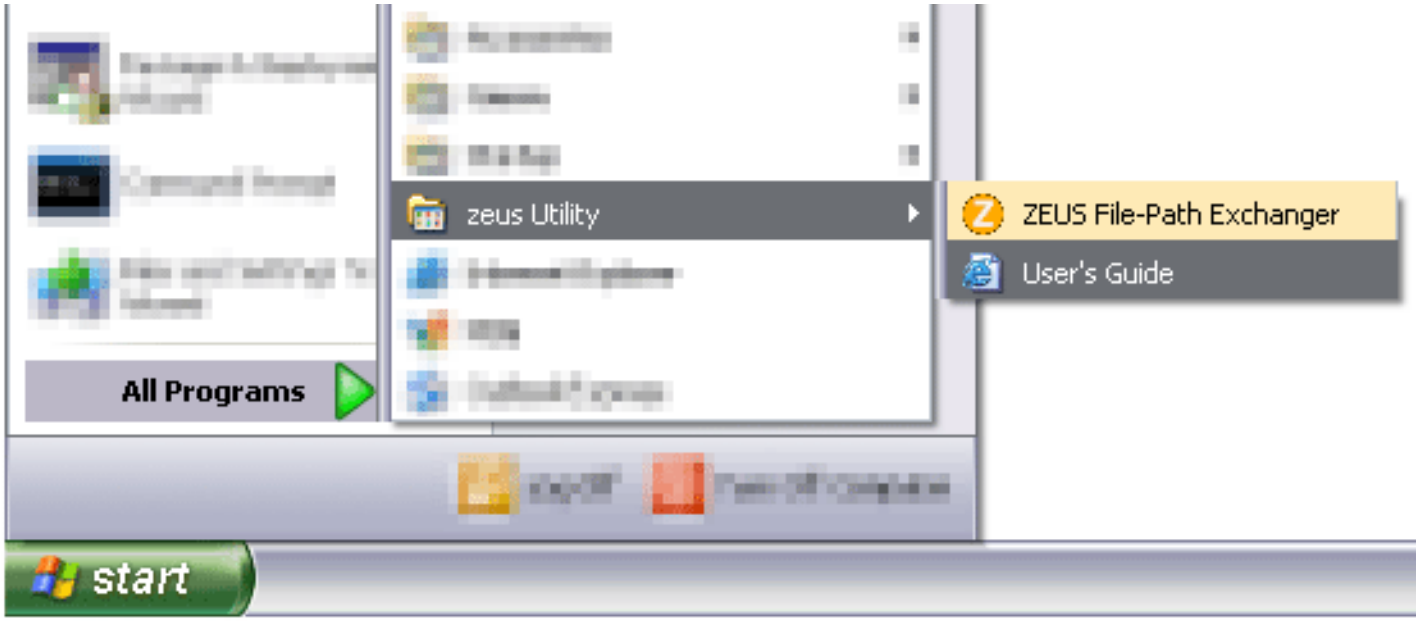
To change the file path, it is required the exclusive utility program "**ZEUS File-Path Exchanger**".

Download zeusFPch.zip and detach it into the appropriate folder.
Unzip it and run the program under \zeusFPch_setup\zeusFPch_setup.exe to install into default folder C:\Program Files\zeusFPch.

When exchanging the file path, refer to the User's Guide or contact to the nearest Toshiba service center for further assistance.

-> Download **ZEUS File-Path Exchanger** (zeusFPch_setup.zip 2.0MB)





The **ZEUS File-Path Exchanger** is the exclusive program to exchange the file-path names written in both source files of ZEUS Service Manual Ver.2 and ZEUS Engine Program Ver.2 into those applicable to the network use.

Note:

In case of accessing the ZEUS Service Manual through WEB site, the small pop-up window appears at the left bottom corner on the screen whenever searching the location links. This is not malfunction.

ZEUS

Next

Move cursor to the text highlightened blue.
Do not change the install folder from the installer default.
If DWF Viewer 6 has been installed, skip "Step: 3".

Step 1 : Install ZEUS Ver. 2.0 program (1MB)

Step 2 : Internet Explorer Settings

Step 3 : Install DWF Viewer 6.0 (6MB)

Step 4 : Install DWF Viewer 6.0 Patch2 (0.8MB)

Step 5 : System Check

<- Back

Checking ZEUS program ...

Click "Yes" in the alert window of the ActiveX control to continue.

IMPORTANT NOTICE

A Known Malfunction

Autodesk® DWF™ Viewer version (Free software provided through WEB)

ZEUS format service manual works with Autodesk DWF Viewer 6 only.

To get Autodesk DWF Viewer 6, open the User's Guide and click the icon button for download, or contact to the nearest Toshiba Service Centre for further assistance.

If the different version has been installed, uninstall it completely and install Autodesk DWF Viewer 6.

1. Uninstall the different version

2. Delete folder
   C:\Program Files\Autodesk\Autodesk DWF Viewer
   C:\Program Files\Common Files\Autodesk Shared\dwf common

3. Install Autodesk DWF Viewer 6

Freezing windows opened (Cannot close the open windows)

This may happen occasionally.
In case of encountering this, follow the procedure below.

1. Press [Ctrl], [Alt] and [Delete] keys at the same time to engage windows security windows.

2. Then, choose TASK manager and Application tab, and select TOSHIBA SERVICE MANUAL-Microsoft Internet Explorer.

3. Click TASK-end.

Main Window back forwarded

The real cause has not been found yet but with this condition, nothing disturbs the service manual operation.
Continue to use by operating the windows.

Precaution when opening the diagrams

While opening the diagrams, the menu in the left frame changes its color to GRAY. This is an indication that the viewer is processing.

With this condition, the menu indication color may stick to the GRAY color or Windows may freeze if clicking other menu.

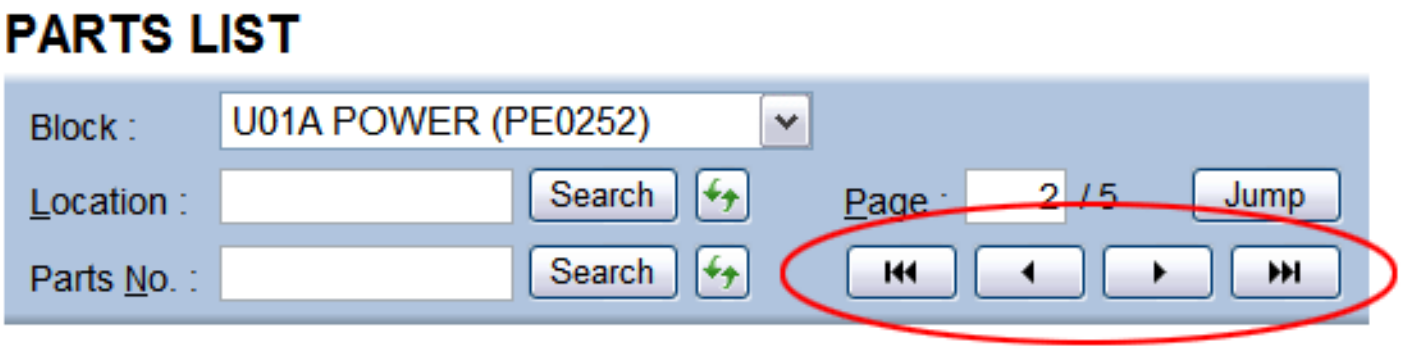
To avoid such things, do not operate any others while menu turns GRAY color.

If entering this, re-open the service manual or refresh the left frame.

Freezing IE browser during the page searching in the part list

The browser IE may freeze if the page forward/reverse button is clicked in double or triple click action by mouse to forward (Next page) / reverse (Previous Page) the pages.

Once the IE operation is interrupted by freezing, Open the service manual by referring to the "**Freezing windows opened**"



Part searching malfunction when returning to the part list by using browser Back button

By using browser's "Back" button click to resume the previous part list, the part search function may be malfunction. Click the part list menu in the left frame to reload the part list.

SAFETY INSTRUCTION

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

Safety Precaution

WARNING: SERVICING SHOULD NOT BE ATTEMPTED BY ANYONE UNFAMILIAR WITH THE NECESSARY PRECAUTIONS ON THIS RECEIVER. THE FOLLOWING ARE THE NECESSARY PRECAUTIONS TO BE OBSERVED BEFORE SERVICING THIS CHASSIS.

1. An isolation transformer should be connected in the power line between the receiver and the AC line before any service is performed on the receiver.

2. Always disconnect the power plug before any disassembling of the product. It may result in electrical shock.

3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as nonmetallic control knobs, insulating covers, shields, isolation resistor-capacitor network, etc.

4. Always keep tools, components of the product, etc away from the children, These items may cause injury to children.

5. Depending on the model, use an isolation transformer or wear suitable gloves when servicing with the power on, and disconnect the power plug to avoid electrical shock when replacing parts. In some cases, alternating current is also impressed in the chassis, so electrical shock is possible if the chassis is contacted with the power on.

6. Always use the replacement parts specified for the particular model when making repairs. The parts used in products require special safety characteristics such as inflammability, voltage resistance, etc. therefore, use only replacement parts that have these same characteristics. Use only the specified parts when the ⚠ mark is indicated in the circuit diagram or parts list.

7. Parts mounting and routing dressing of wirings should be the same as that used originally. For safety purposes, insulating materials such as isolation tube or tape are sometimes used and printed circuit boards are sometimes mounted floating. Also make sure that wirings is routed and clamped to avoid parts that generate heat and which use high voltage. Always follow the manufactured wiring routes / dressings.

8. Always ensure that all internal wirings are in accordance before re-assembling the external casing after a repairing completed. Do not allow internal wiring to be pinched by cabinets, panels, etc. Any error in reassembly or wiring can result in electrical leakage, flame, etc., and may be hazardous.

9. NEVER remodel the product in any way. Remodeling can result in improper operation, malfunction, or electrical leakage and flame, which may be hazardous.

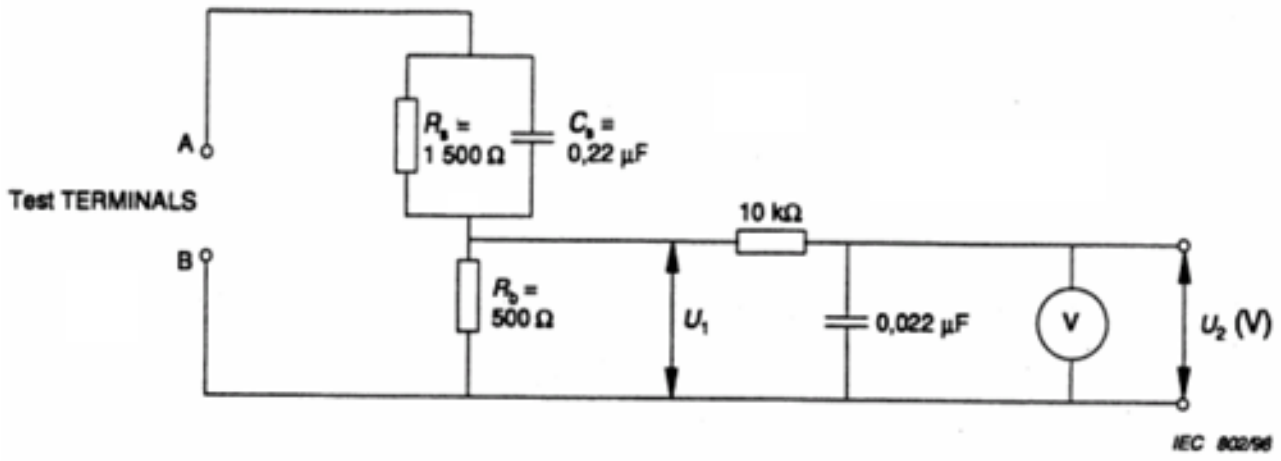
10. Touch current check. (After completing the work, measure touch current to prevent an electric shock.)

    - Plug the AC cord directly into the AC outlet. Do NOT use an isolation transformer for this check.

    - Connect a measuring network for touch currents between each exposed metallic part on the set and a good earth ground such as a water pipe.

Annex D
(normative)

Measuring network for TOUCH CURRENTS



Resistance values in orms (Ω).

V: Voltmeter or oscilloscope
(r.m.s. or peak reading)

Input resistance : $\geqq$ 1 MΩ
Input capacitance : $\leqq$ 200 pF
Frequency range : 15 Hz to 1 MHz and d.c. respectively

Note: Appropriate measures should be taken to obtain the correct value in case of non sinusoidal waveforms.

The measuring instrument is calibrated by comparing the frequency factor of U_2 with the solid line in figure F.2 of IEC 60990 at various frequencies. A calibration curve is constructed showing the deviation of U_2 from the ideal curve as a function of frequency.

TOUCH CURRENT = U_2/500 (peak value).

- The potential at any point (TOUCH CURRENT) expressed as voltage U_1 and U_2 does not exceed the following value:

The part or contact of a TERMINAL is not HAZARDOUS LIVE if:

a) The open-circuit voltage should not exceed 35 V (peak) a.c. or 60 V d.c. or, if a) is not met.
b) The measurement of the TOUCH CURRENT shall be carried out in accordance with IEC 60990, with the measuring network described in **Annex D** of this standard.

   The TOUCH CURRENT expressed as voltages U_1 and U_2, does not exceed the following values:
   - for a.c. : U_1 = 35 V (peak) and U_2 = 0.35 V (peak);
   - for d.c. : U_1 = 1.0 V

Note: The limit values of U_2 = 0.35 V (peak) for a.c. and U_1 = 1.0 V for d.c. correspond to the values 0.7 mA (peak) a.c. and 2.0 mA d.c.

Product Safety Notice

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create electrical shock, fire, or other hazards.

SAFETY INSTRUCTION

Handling the LCD Module

Safety Precaution

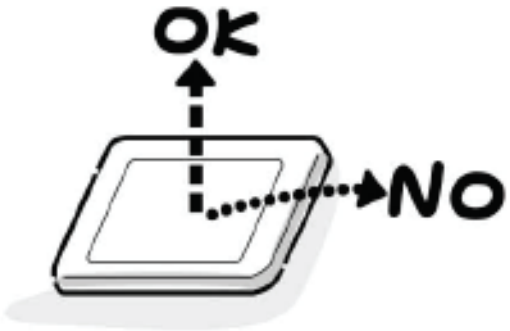
In the event that the screen is damaged or the liquid crystal (fluid) leaks, do not breathe in or drink this fluid.
Also, never touch this fluid. Such actions could cause toxicity or skin irritation. If this fluid should enter the mouth, rinse the mouth thoroughly with water. If the fluid should contact the skin or clothing, wipe off with alcohol, etc., and rinse thoroughly with water. If the fluid should enter the eyes, immediately rinse the eyes thoroughly with running water.

Precautions for Handling the LCD Module

CAUTION: The metal edges of the LCD module are sharp, handle it with care.

The LCD module can easily be damaged during disassembly or reassembly; therefore, always observe the following precautions when handling the module.

1. When attaching the LCD module to the LCD cover, position it appropriately and fasten at the position where the display can be viewed most conveniently.



2. Carefully align the holes at all four corners of the LCD module with the corresponding holes in

the LCD cover and fasten with screws. Do not strongly push on the module because any impact can adversely affect the performance. Also use caution when handling the polarized screen because it can easily be damaged.

3. If the panel surface becomes soiled, wipe with cotton or a soft cloth. If this does not remove the soiling, breathe on the surface and then wipe again.
   If the panel surface is extremely solied, use a CRT cleaner as a cleaner. Wipe off the panel surface by drop the cleaner on the cloth. Do not drop the cleaner on the panel. Pay attention not to scratch the panel surface.

4. Leaving water or other fluids on the panel screen for an extended period of time can result in discoloration or stripes. Immediately remove any type of fluid from the screen.

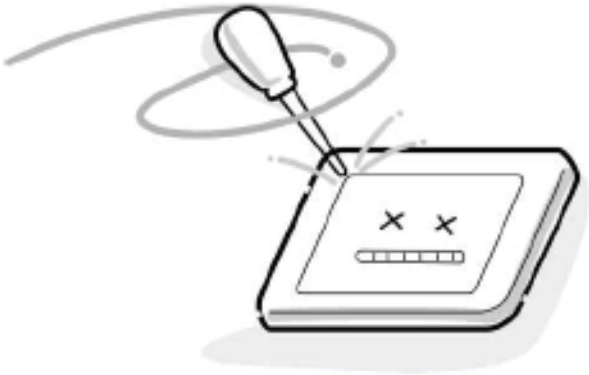
5. Glass is used in the panel, so do not drop or strike with hard objects. Such actions can damage the panel.

6. CMOS-LSI circuitry is used in the LCD module, so avoid damage due to static electricity. When handling the module, use a wrist ground or anchor ground.

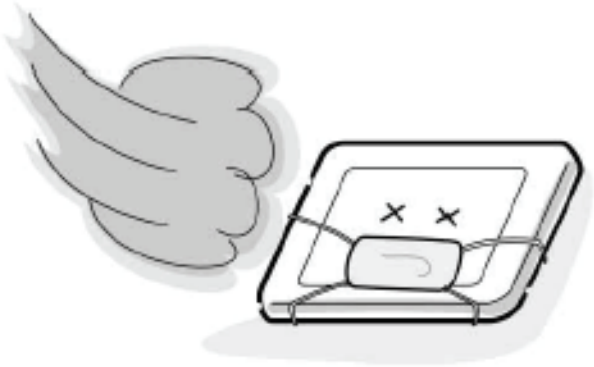
7. Do not expose the LCD module to direct sunlight or strong ultraviolet rays for an extended period of time.

8. Do not store the LCD module below the temperature conditions described in the specifications. Failure to do so could result in freezing of the liquid crystal due to cold air or loss of resilience or other damage.

9. Do not disassemble the LCD module. Such actions could result in improper operation.



10. When transporting the LCD module, do not use packing containing epoxy resin (amine) or silicon resin (alcohol or oxim). The gas generated by these materials can cause loss of polarity.



SCHEMATIC DIAGRAM

Precaution

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION" FOR DIRECT VIEW CTV ONLY, "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" OF THIS MANUAL.

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

The mounting position of replacements is to be identical with originals.
Before replacing any of these components, read carefully the SAFETY PRECAUTION and PRODUCT SAFETY NOTICE.

Do not degrade the safety of the receiver through improper servicing.

Note:

1. RESISTOR
   Resistance is shown in ohm [K=1,000, M=1,000,000]. All resistors are 1/6 W and 5 % tolerance carbon resistor, unless otherwise noted as the following marks.

   1/2R : Metal or Metal oxide of 1/2 watt
   1/2S : Carbon composition of 1/2 watt
   1RF : Fuse resistor of 1 watt
   10 W : Cement of 10 watt
   K : ±10 %
   G : ±2 %
   F : ±1 %

2. CAPACITOR
   Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in μF, and the values more than 1 in pF.
   All capacitors are ceramic 50 V, unless otherwise noted as the following marks.

   = Electrolytic capacitor
   = Mylar capacitor

3. The parts indicated with "⚠" have special characteristics, and should be replaced with identical parts only.

4. Voltages read with DIGITAL MULTI-METER from point indicated to chassis ground, using a color bar signal with all controls at normal, line voltage at nominal AC volts.

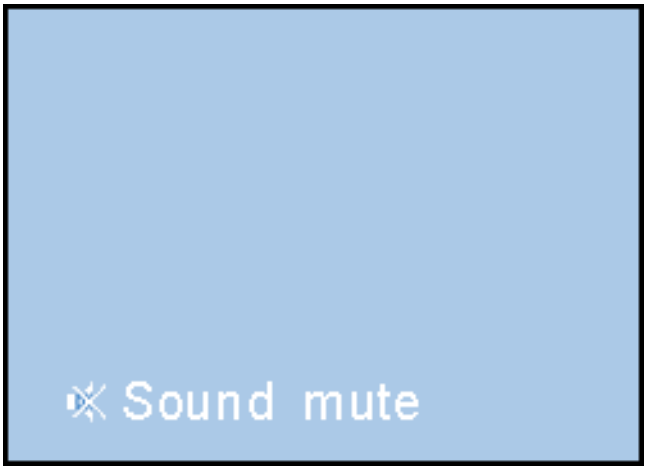
5. Waveforms are taken receiving color bar signal with enough sensitivity.

6. Voltage reading shown are nominal values and may vary ±20 % except H.V.

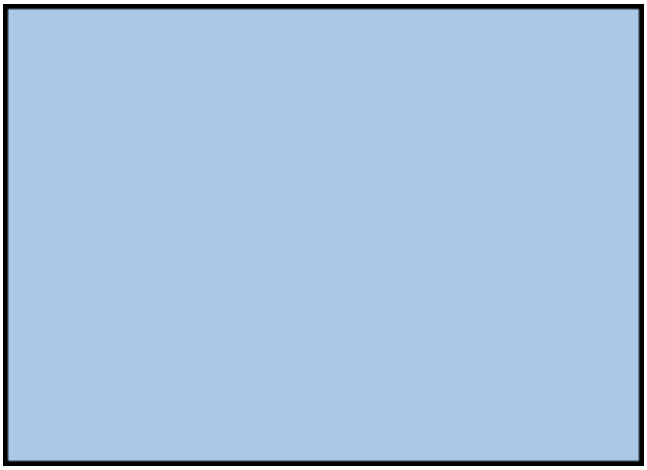
ADJUSTMENT

Service Mode

Entering to Service Mode



↓

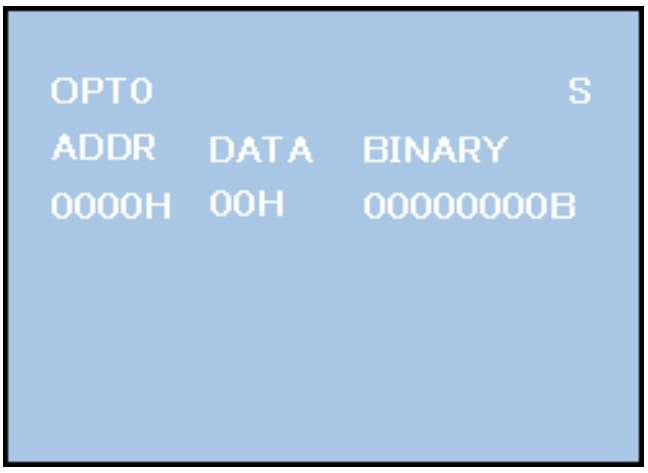


↓

Service Mode display

1. Set VOLUME to minimum and press button once on remote control.

2. Press button again and hold button down.

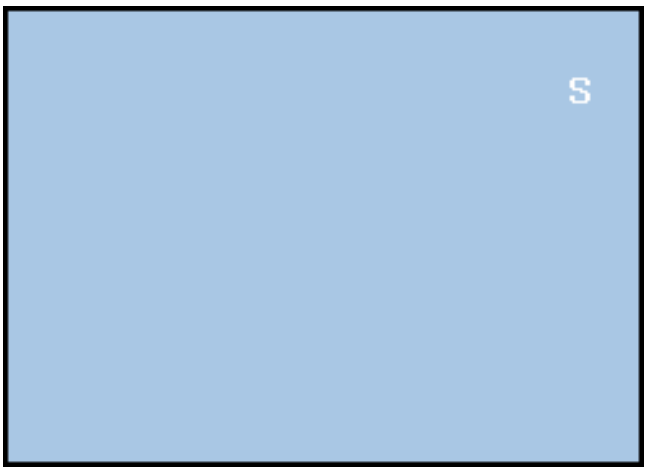


3. While holding the button, press MENU button on TV set.

Displaying the Adjustment Menu

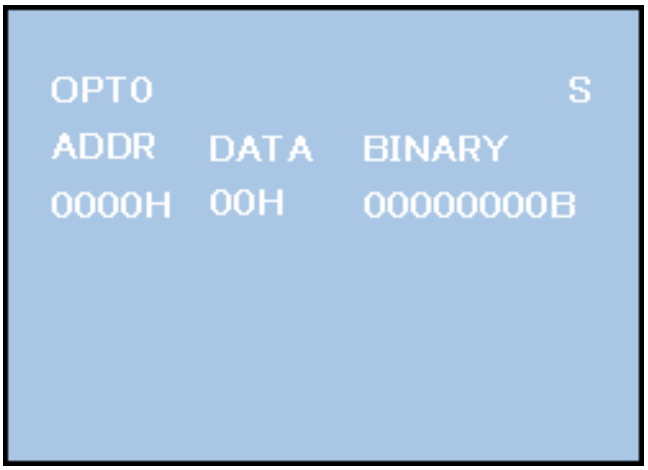
Press MENU button on TV.

Service Mode



Press ↑ ↓ Press

Adjustment Mode



Key Function in the Service Mode

The following key entry during display of adjustment menu provides special functions.

CAUTION: Never try to perform initialization unless you have changed the memory IC.

Test signal selection	button (on remote control)
Selection of the adjustment items	CH ▲/▼ (on TV or remote control)
Change of the data value	Volume +/- (on TV or remote control)
Adjustment menu mode ON/OFF	MENU button (on TV)
"RCUT" selection	1 button
"GCUT" selection	2 button
"BCUT" selection	3 button
"CNTX" selection	4 button
"COLC" selection	5 button
"TNTC" selection	6 button
Automatic A/D Adjustment (PC, Component, Composite (PAL, NTSC))	7 button
Self diagnostic display ON/OFF	9 button

Selecting the Adjusting Item

Every pressing of CH ▲ button in the service mode changes the adjustment items in the order of table below. (▼ button for reverse order)

SETTING & ADJUSTING DATA

[SERVICE MODE]

ADJUSTING ITEMS AND DATA IN THE SERVICE MODE:

Note:

The image system data of RCUT-BDRV is different by each image format.
The PAL value is indicated in the table.
Never adjust H.POS and V.POS except PAL/WIDE mode.

Item	Name of adjustment
RCUT	R CUT OFF
GCUT	G CUT OFF
BCUT	B CUT OFF
RDRV	R DRIVE
GDRV	G DRIVE
BDRV	B DRIVE
BRTC	BRIGHTNESS CENTER
COLC	COLOR CENTER
TNTC	BASE BAND TINT

CNTX	CONTRAST MAX
VOLUX	MAX VOLUME LIMITED
OPT1	TV SET OPTION 1
OPT2	TV SET OPTION 2
OPT3	TV SET OPTION 3
OPT4	TV SET OPTION 4 (PANEL OPT DATA FOR VENDOR)
OPT5	TV SET OPTION 5 (PANEL OPT DATA FOR SIZE)
OPT6	TV SET OPTION 6 (HOTEL MODE)
OPT7	TV SET OPTION 7 (HOTEL MODE)
OPT8	TV SET OPTION 8 (HOTEL MODE)
ID	PANEL

Factory preset data will be loaded after setting PANEL data.
(Refer to setting data of Main board.)

Adjusting the Data

Pressing of VOLUME +/- button will change the value of data in the range from 00H to FFH. The variable range depends on the adjusting item.

Setting Panel Option Data

Panel option data is subject to OPT4 and OPT5.
Enter to service mode and select menu of OPT4 or OPT5 by pressing P▲ or P▼ during display of adjustment menu. After selecting OPT4 or OPT5, press + or - to set OPT4 or OPT5 value as table below.

Panel option data

Series		Model name	Panel vendor	OPT4 value	OPT5 value
AV500P	EU	32AV500P/501P	LPL	0x01	0x05
			IPS	0x07	0x05
		37AV500P/501P	LPL	0x01	0x06
			IPS	0x07	0x06
		42AV500P/501P	LPL	0x01	0x07

OPT4

Ex. OPT4 value 0x05 indicates that panel vendor is AUO AMVA.

		OPT4							
		D7 (bit7)	D6 (bit6)	D5 (bit5)	D4 (bit4)	D3 (bit3)	D2 (bit2)	D1 (bit1)	D0 (bit0)
Panel vendor	LPL	-	-	-	-	0	0	0	1
	SHP	-	-	-	-	0	0	1	0
	CMO	-	-	-	-	0	0	1	1
	AUO PMVA	-	-	-	-	0	1	0	0
	AUO AMVA	-	-	-	-	0	1	0	1
	SAMSUNG	-	-	-	-	0	1	1	0
	IPS	-	-	-	-	0	1	1	1

OPT5

Ex. OPT5 value 0x05 indicates that panel size is 32.

		OPT5							
		D7 (bit7)	D6 (bit6)	D5 (bit5)	D4 (bit4)	D3 (bit3)	D2 (bit2)	D1 (bit1)	D0 (bit0)
Size	32	-	-	-	-	0	1	0	1

	37	-	-	-	-	0	1	1	0
	42	-	-	-	-	0	1	1	1

Convert from Bit (Binary) to Hex

The table for converting from bit (D7-D0) to hex (0x**).

		BIT (Binary)			
High nibble		**D7**	**D6**	**D5**	**D4**
Low nibble		**D3**	**D2**	**D1**	**D0**
HEX	**0**	0	0	0	0
	1	0	0	0	**1**
	2	0	0	**1**	0
	3	0	0	**1**	**1**
	4	0	**1**	0	0
	5	0	**1**	0	**1**
	6	0	**1**	**1**	0
	7	0	**1**	**1**	**1**
	8	**1**	0	0	0
	9	**1**	0	0	**1**
	A	**1**	0	**1**	0
	B	**1**	0	**1**	**1**
	C	**1**	**1**	0	0
	D	**1**	**1**	0	**1**
	E	**1**	**1**	**1**	0
	F	**1**	**1**	**1**	**1**

E.g. If Bit D7-0 = 0**1**0**1** **1**0**1**0, Hex data is 0x**5A**.

Exit from Service Mode

Pressing POWER button to turn off the TV once.

Setting Data of Signal Unit

After replacing Main board, the following initialization is required.

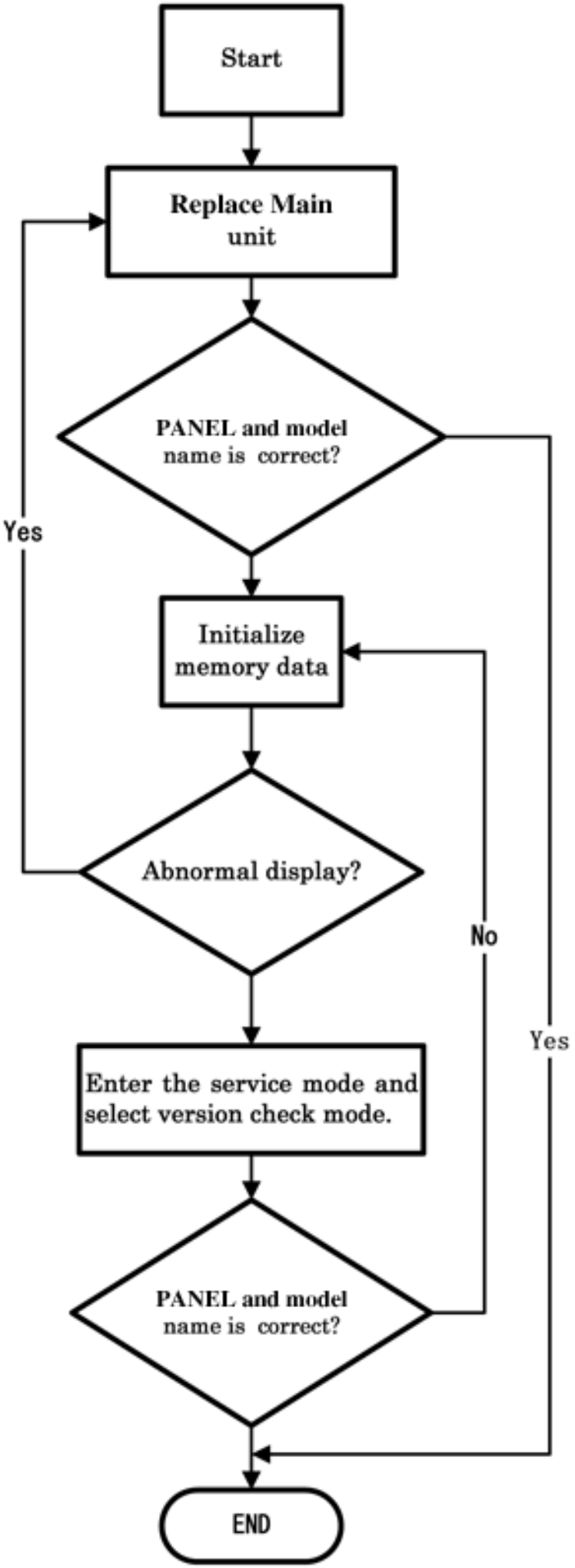
CAUTION: Whenever using new Main board to the set, setting the PANEL data according to Panel option data.

Note:
In case initialization by setting wrong PANEL is done, there is a possibility of abnormal display.

1) Check the picture carefully. If necessary, adjust any adjustment item above.
Perform "Auto tune" on the owner's manual.

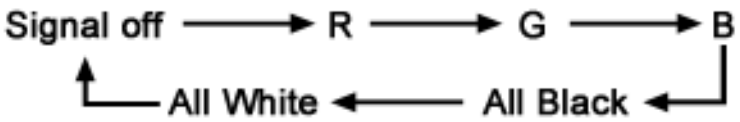
PANEL (HEX)	Model name	Panel vendor
0x01	32AV500P/501P	IPS
0x02	37AV500P/501P	IPS
0x03	42AV500P/501P	IPS

Initializing Data setting flowchart after replacing the Signal Unit


Start
Replace Main unit
PANEL and model name is correct?
Yes
Initialize memory data
Abnormal display?
No
Yes
Enter the service mode and select version check mode.
PANEL and model name is correct?
END

Test Signal Selection

Every pressing of button on the remote control changes the built-in test patterns on screen as described below in Service Mode.



Picture	Signal
	Red raster
	Green raster
	Blue raster
	All Black

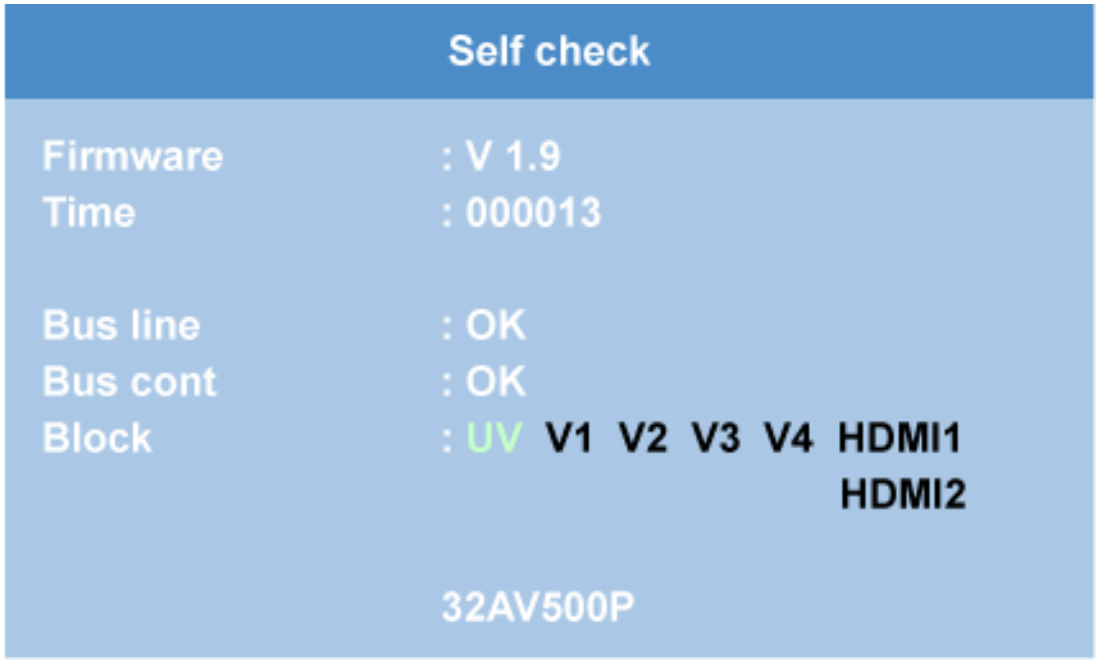
	All White

Self Diagnostic Function

1. Press "9" button on remote control during display of adjustment menu in the service mode. The diagnosis will begin to check if interface among IC's is executed properly.

2. During diagnosis, the following displays are shown.

* Self check display and Item are subject to the models.



(1) Firmware :
Version information of microprocessor

(2) Time : Total hour of turn the TV on. (Unit : H)

(3) Bus line : -- "OK" is normal
SCL-GND (Red indication) : SCL-GND short circuit
SDA-GND (Red indication) : SDA-GND short circuit
SCL-SDA (Red indication) : SCL-SDA short circuit

(4) Bus cont : --- "OK" is normal.
NG is abnormal (Red indication).
When the abnormal status is detected, type name of semiconductor is indicated in red colour.

(5) Block
UV : TV reception mode
V1 - V4 : VIDEO 1-4 input mode

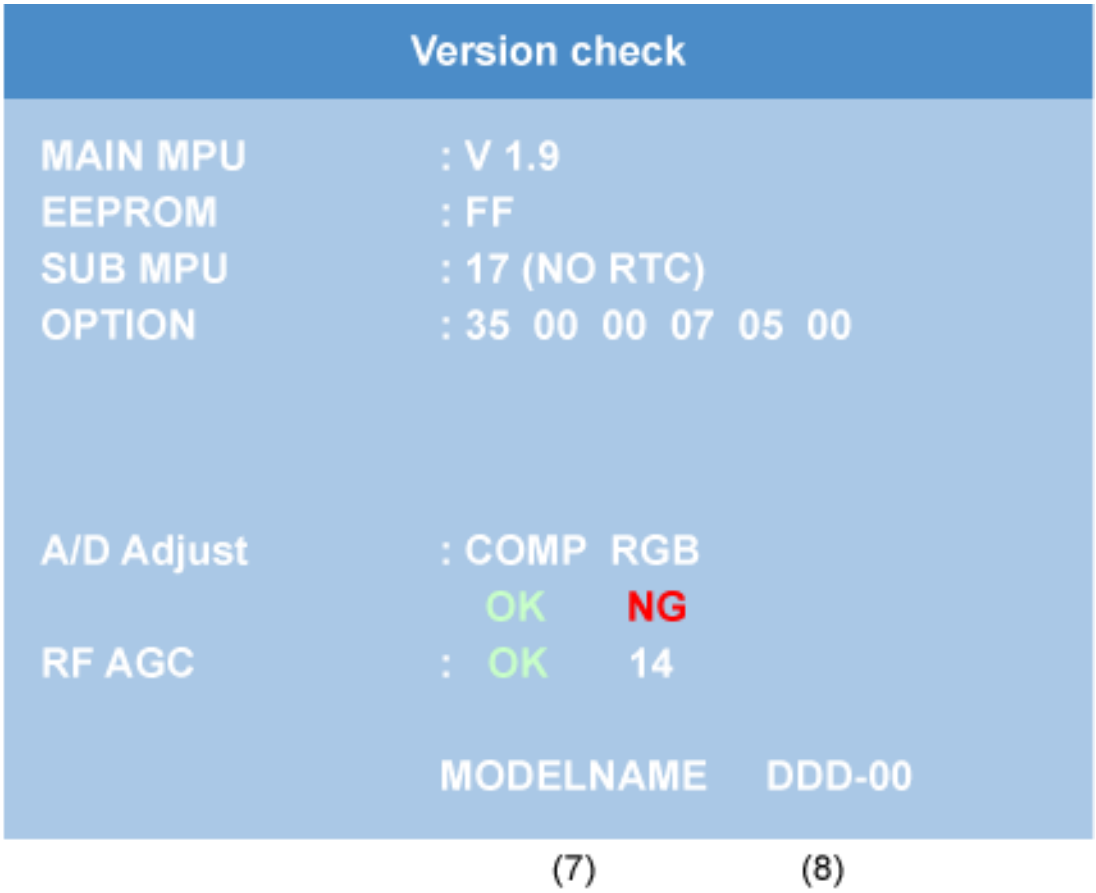
UV	RF
V1	1 SCART 1
V2	2 SCART 2
V3	3 COMPONENT
V4	4 COMPOSITE
HDMI1	HDMI1 input
HDMI2	HDMI2 input

Version Check Mode

1. Press "9" button twice on remote control during display of adjustment menu in the service mode. The version of main MPU will be checked.

2. During Version Check, the following displays are shown.

* Version check display and Item are subject to the models.


Version check
(1) MAIN MPU : V 1.9
(2) EEPROM : FF
(3) SUB MPU : 17 (NO RTC)
(4) OPTION : 35 00 00 07 05 00
(5) A/D Adjust : COMP RGB
OK NG
(6) RF AGC : OK 14
MODELNAME DDD-00
(7)
(8)

(1) MAIN MPU :
Version information of microprocessor

(2) EEPROM :
Version information of EEPROM : Display 1 byte data.

(3) SUB MPU :
Version information of SUB MPU : Display 1 byte data.

(4) OPTION :
Option information : Display six numbers of 1 byte data.

(5) A/D Adjust
A/D adjustment item.
--COMP : Component input
--RGB : PC input
--OK : A/D adjustment set correctly.
--NG : A/D adjustment set incorrect.
-- : A/D adjustment is not needed. Because its picture format isn't used.

(6) RF AGC adjustment value
RF Adjustment Value is shown.

(7) Model Name
Model name information (ascii code). : Display 7 byte data.

(8) LCD Panel Vendor information display

The following Panel Vendor (DDD) and screen size (00) are displayed.

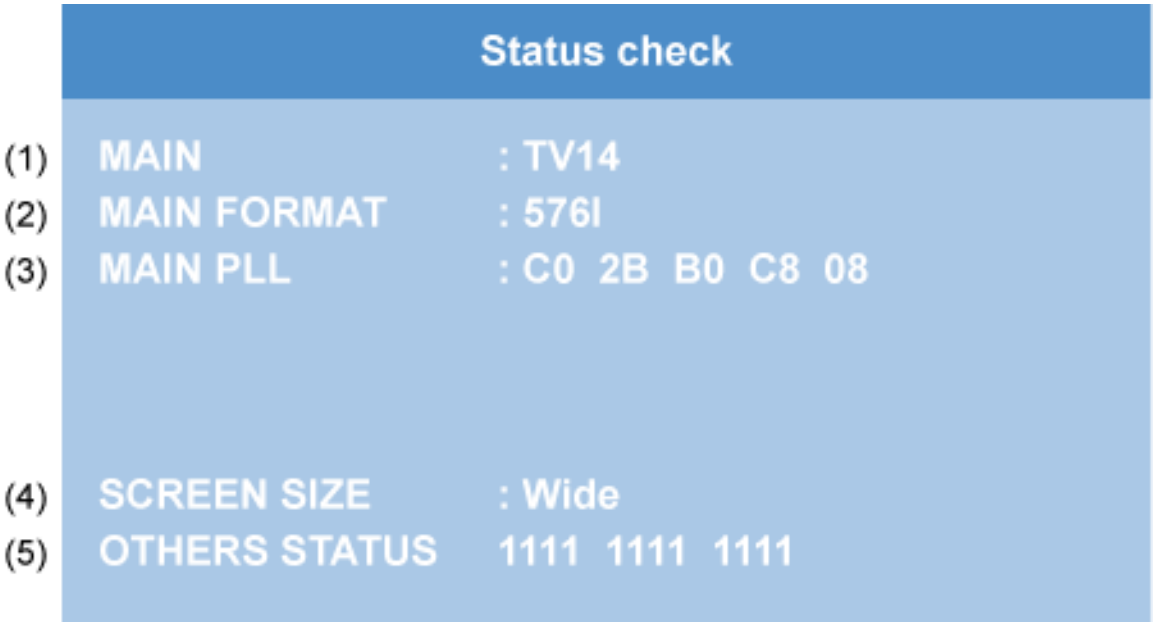
Example : IPS-32 indicates that Vendor is IPS and Screen Size is 32 inch

Status Check Mode

1. Press "9" button thrice on remote control during display of adjustment menu in the service mode. The status of this model will be checked.

2. During Status Check, the following displays are shown.

* Status check display and Item are subject to the models.



(1) MAIN :

Main source information :

Display RF position number (0 - 99) on the main screen, or Input Source (EXT1/2/3/HDMI etc.)

(2) MAIN FORMAT :

Display Video and PC format information

(3) MAIN PLL :

Main PLL information : Display 1 byte data at five.

(4) SCREEN SIZE :

Display the screen size as follows.

Exact Scan
Wide
Super Live 2
Cinema 2
4:3
Super Live 1
Cinema 1
Subtitle
14:9

Note:

Exact Scan is shown only for 1080p panel model with video input mode except pc.

(5) OTHER STATUS :

Other status information : Display three numbers of 2 byte data.

Setting Hotel Mode

Enter to service mode and select Hotel Mode menu by pressing P▲ or P▼.
After selecting Hotel Mode, press ◿ + to enter details setting in Hotel Mode.

To select menu, press P▲ or P▼ and press OK to enter the adjustment menu of table bellow.
To move the cursor in the adjustment, press ◿ + or ◿ -.

1. By pressing P▲ or P▼, OPT2 setting will change the value either 1 or 0 on selected items as follows;

OPT2

OPT2	FUNCTION DESCRIPTION	1	0 (Normal)

D7 (bit7)	- (no use)	-	-
D6 (bit6)	- (no use)	-	-
D5 (bit5)	FRONT Key	Disable	Enable
D4 (bit4)	All keys except input selector key (Video/TV)	Disable	Enable
D3 (bit3)	User remote control operation	Disable (Service mode and Supere User mode may possible to setting only)	Enable
D2 (bit2)	Disable SET UP MENU except language. (tuning SETUP MENU)	Disable (Display the language only)	Enable
D1 (bit1)	Disable SETUP MENU	Disable	Enable
D0 (bit0)	HOTEL Mode	On (Enable the setting of D1 from to D7)	Off (Normal)

VOLUX

Set VOLUX as following.

1) Set speaker volume to 100. (Any value is OK, but 100 is better to check sound level.)

2) Down value of VOLUX until finding suitable sound volume level.

VOLUX	FUNCTION DESCRIPTION	1	0 (Normal)
D7 (bit7) ~ D0 (bit0)	Max Limiter of Volume Control	0x00 ~ 0x7F (Normal: 0x7C)	

OPT6

OPT6	FUNCTION DESCRIPTION	1	0 (Normal)

D7 (bit7)	Enable mode that POS or VIDEO program number will be appeared in forced when turn ON the main power	Enable	Disable
D6 (bit6) ~ D0 (bit0)	POS or VIDEO program number	0 ~ 127 [decimal] (Normal: 0) POS number: 0 ~ 99 VIDEO number: 100 ~ 127 (DTV = 100, VIDEO = 101, VIDEO = 102..) 100 is used as ATV when DTV option is disable.	

OPT7

OPT7	FUNCTION DESCRIPTION	1	0 (Normal)
D7 (bit7)	Enable mode that speaker volume will be set in forced when turn ON the main power	Enable	Disable
D6 (bit6) ~ D0 (bit0)	Forced speaker volume	0 ~ 100 [decimal] (Normal: 0) Value above 100 is no effect.	

OPT8

OPT8	FUNCTION DESCRIPTION	1	0 (Normal)
D7 (bit7) ~ D3 (bit3)	- (no use)	-	-
D2 (bit2)	Enable mode that picture mode will be set in forced when turn ON the main power	Enable (Display the language only)	Disable
D1 (bit1) ~ D0 (bit0)	Forced picture mode	0 [dec]: Dynamic (mode-1) (Normal) 1 [dec]: Standard (mode-2) 2 [dec]: Mild (mode-3) 3 [dec]: Memory (mode-M)	

LED Indication

The Green and Red LEDs on the TV (at the bottom center of the TV) indicate the TV's status, as described below.

- Red ON (solid) and Green OFF = The TV power cord is plugged in.
- Green ON (solid) and Red ON = The On timer is operating.

	LED Indication	Condition	Solution
1	Green is OFF; Red blinks continuously at 0.5-second intervals.	Abnormal operation	Turn OFF the TV and unplug the power cord. Plug the power cord in again and turn ON the TV.
2	Green is OFF; Red blinks continuously at 1-second intervals.	Abnormal operation of BUS line.	Turn OFF the TV and unplug the power cord. Plug the power cord in again and turn ON the TV.

PANEL IDENTIFICATION

Panel Identification

If the several panels are alternatively used in the same model without amending the model name, the identification marking will be shown at the last digit of the set serial number on the specification label on the back cover.

In servicing, do not alter the panel because several setting and parts are different.

Marking	Panel Vendor	Marking	Panel Vendor	Marking	Panel Vendor
A	AUO	J		S	SHARP
B		K	SAMSUNG	T	
C	CMO	L	LPL	U	
D		M		V	
E		N		W	
F		P		X	
G		Q		Y	
H	IPS	R		Z	

With this alternative use, some of key parts may differ and their combinations are indicated with the suffix marking on the location number in the part list (Miscellaneous).

e.g.

Location No.	Part No.	Description
B001A	75007869	LCD Panel, 32" LPL
B001B	75007870	LCD Panel, 32" AUO
MZ01A	75006036	LDVS Cable
MZ01B	75007893	LDVS Cable

PARTS LIST

Precaution

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION" FOR DIRECT VIEW CTV ONLY, "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" OF THIS MANUAL.

CAUTION: The international hazard symbols "⚠" in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

The mounting position of replacements is to be identical with originals.
Before replacing any of these components, read carefully the SAFETY PRECAUTION and PRODUCT SAFETY NOTICE.

Do not degrade the safety of the receiver through improper servicing.

Note:

- The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.
- The PC board assembly with ✱ mark is no longer available after the end of the production.

Abbreviations

Capacitors CD : Ceramic Disk

Resistors CF : Carbon film

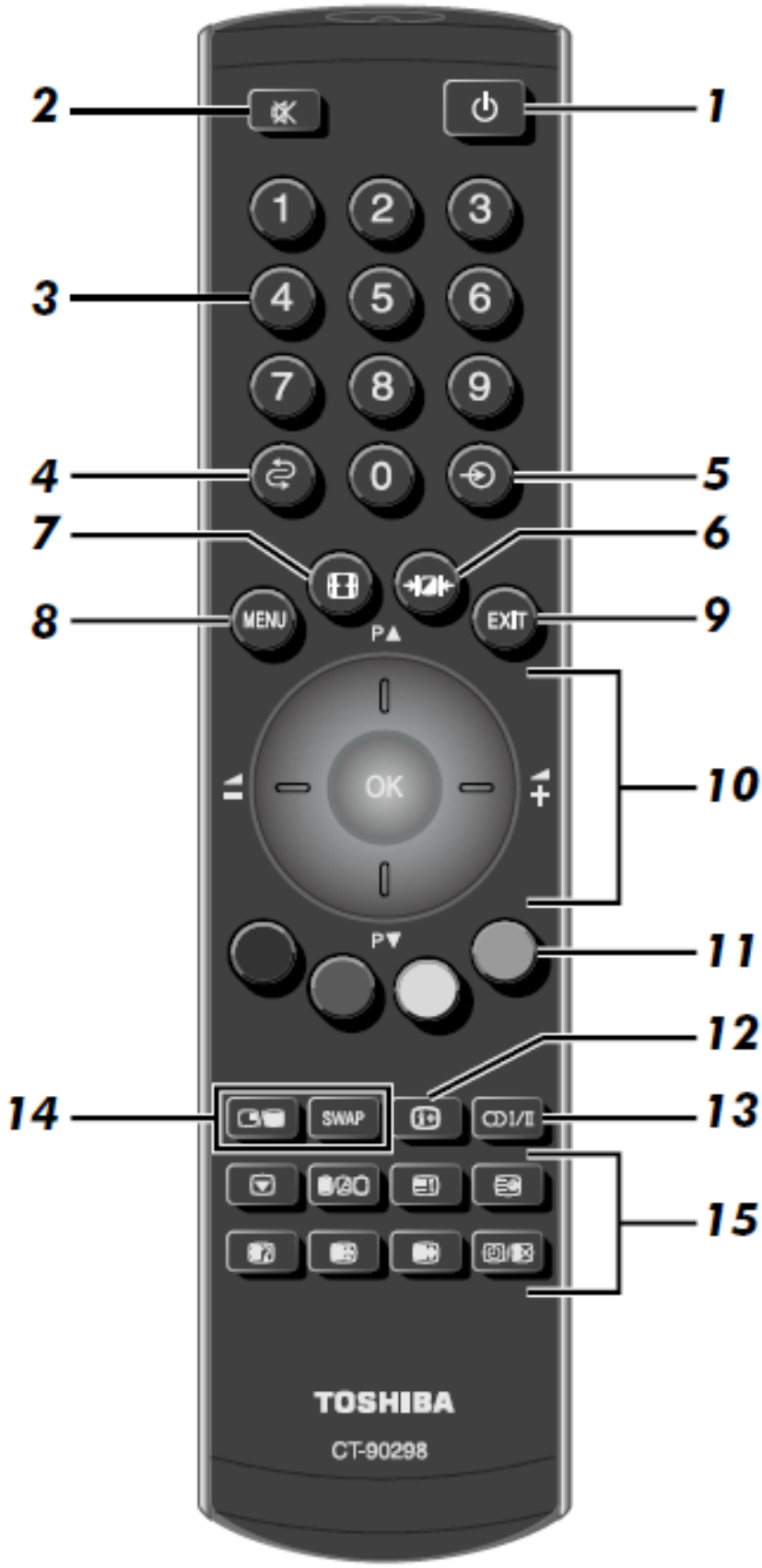
OMF : Oxide Metal Film
PF : Plastic Film
CC : Carbon Composition
VR : Variable Resistor
EL : Electrolytic
MF : Metal Film
FR : Fusible Resistor

All CD and PF capacitors are ±5 %, 50 V and all resistor, ±5 %, 1/6 W unless otherwise noted.

FUNCTION AND OPERATION

The Remote Control

Simple at-a-glance reference of your remote control.



1 For On/Standby mode

2 To mute the sound

3 Number buttons

4 To return to the previous programme

5 To select input from external sources

6 Selectable picture preferences

7 Widescreen viewing

8 On-screen Menus

9 To exit Menus

10 Navigation Ring:

Use P▲ and P▼ to change programme positions and text pages
Use ◁ and ▷ to alter the volume
When using menus press P▲ (up), P▼ (down), ◁ (left) and ▷ (right) to move the cursor on the screen. OK to confirm your selection

11 Text control buttons

12 To display on-screen information

13 Stereo/bilingual transmissions

14 No function on this model

15 **When in TV mode:**

▼	Still picture
🕘/EX	Time display
☰/◪/▢	To call up text

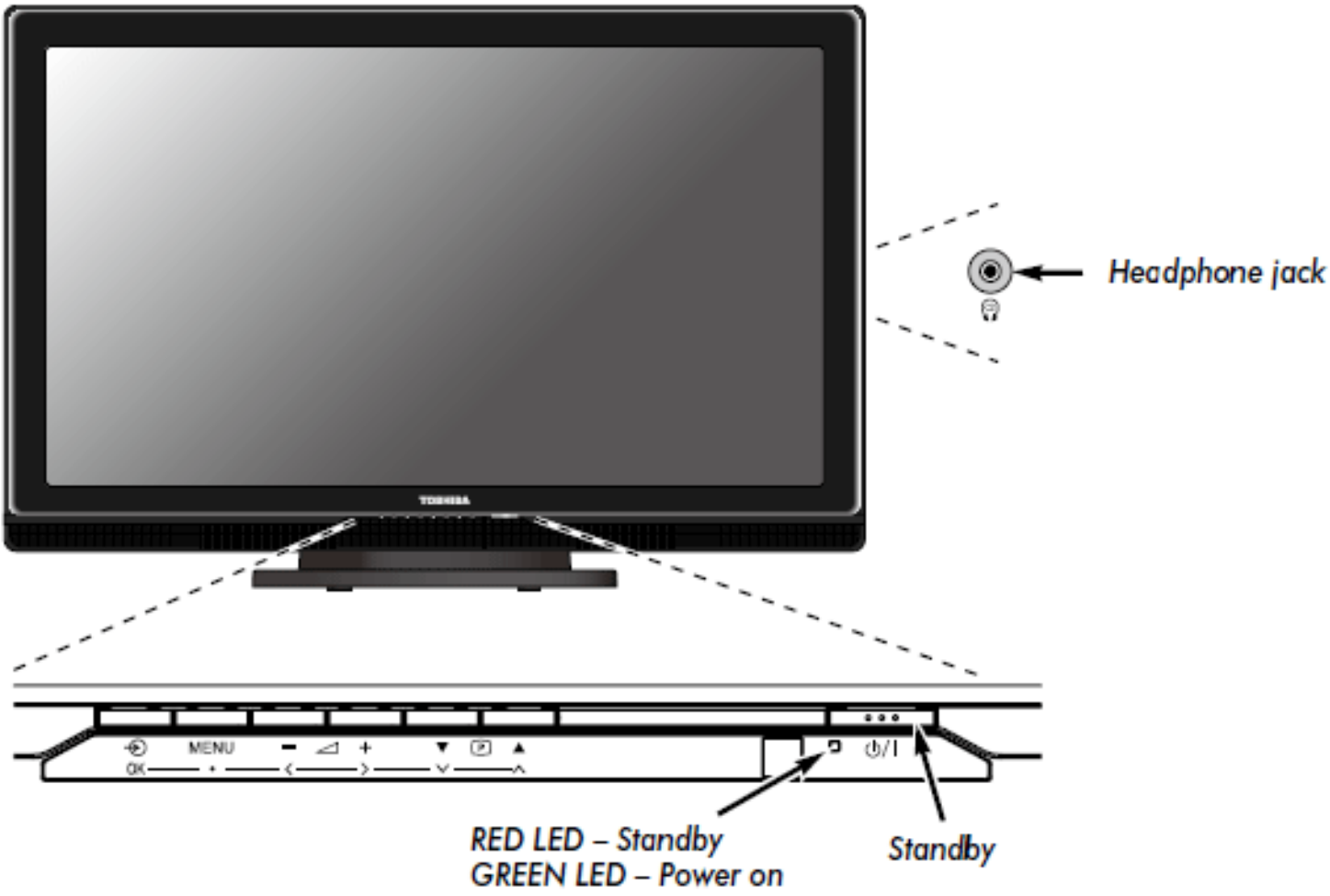
When in Text mode:

i	To access index page
◕	To access Sub pages
?	To reveal concealed text
⧗	To hold a wanted page
↕	To enlarge text display size
🕘/EX	To select a page whilst viewing a normal picture

FUNCTION AND OPERATION

Using the Controls

Whilst all the necessary adjustments and controls for the television are made using the remote control, the buttons on the television may be used for some functions.



Switching On

If the RED LED is unlit check that the mains plug is connected to the power supply. If the picture does not appear press ⏻ on the remote control, it may take a few moments.

To put the television into Standby press ⏻ on the remote control. To view the television press ⏻ again. The picture may take a few seconds to appear.

Using the Remote Control

To set up the television you will now need to use the on-screen menus. Press MENU on the remote control to see the menus.

The menu bar at the top of the screens will show five different topics shown in symbols. As each symbol is selected by pressing − or + on the navigation ring on the remote control, its respective options will appear below.

To use the options, press P▼ on the navigation ring to move down through them and OK, − or + to select the required choice. Follow the on-screen instructions. The functions of each menu are described in detail throughout the manual.

Using the Controls

To alter the volume press – ◿ +.

To alter the programme position press ▼ P ▲.

Press **MENU** and <, >, ^ or v to control the sound and picture options.

Press **MENU** to finish.

To select the external input, press ⊖ until the appropriate input source is selected.

Please note: Inserting the headphone plug will mute the sound from all speakers.

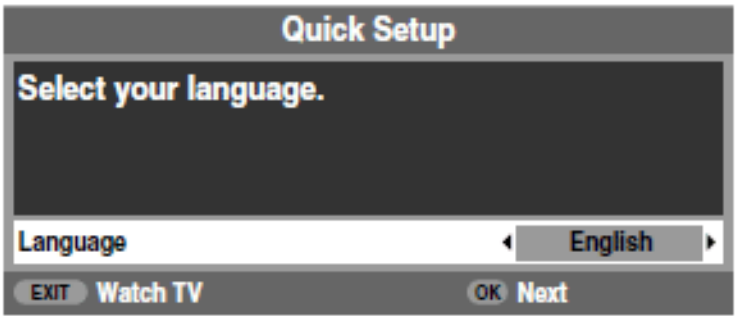
FUNCTION AND OPERATION

Tuning the Television

Before switching on the television put your decoder and media recorder to **Standby** if they are connected.

Quick Setup

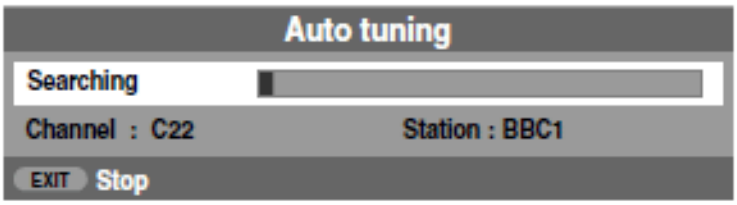
1. Connect the television to the mains power and press the ⏻ button. The **Quick Setup** screen will appear.



2. Using ▲ or ▼ select your **language**, then press (OK).

3. Then press ▲ or ▼ to select your **country** and press (OK).

4. To start **Auto tuning** press (OK).

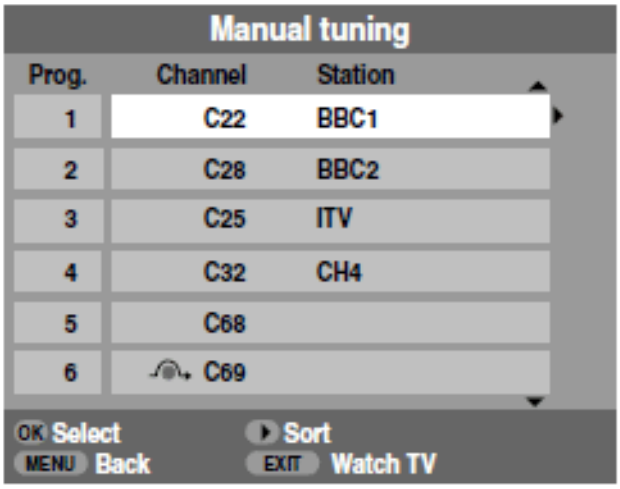


The search will begin for all available stations. The slide bar will move along the line as the search progresses.

You must allow the television to complete the search.

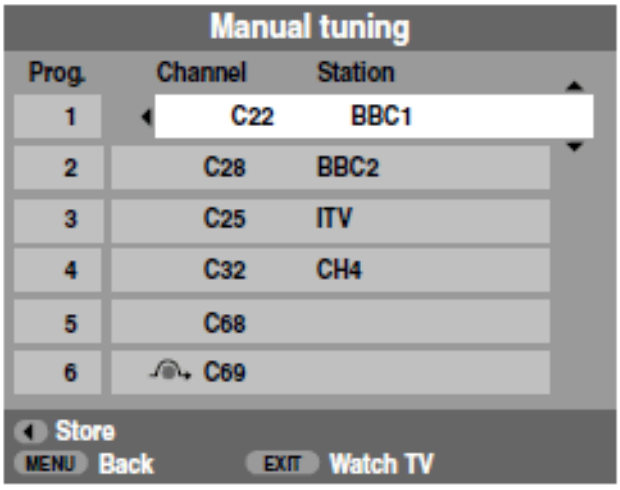
When the search is complete the television will automatically select programme position 1. This may not be a clear picture or the signal may be weak, so the station order can be changed using **Manual tuning** which will appear on the screen.

automatically select programme position 1. This may not be a clear picture or the signal may be weak, so the station order can be changed using **Manual tuning** which will appear on the screen.



5 With the list of stations now showing use P▲ or P▼ to highlight the station you want to *move* and press ⊲+.

The selected station will be moved to the right of the screen.



6 Use P▲ or P▼ to move through the list to your *preferred* position. As you do so the other stations will move to make room.

7 Press ⊲ to store your move.

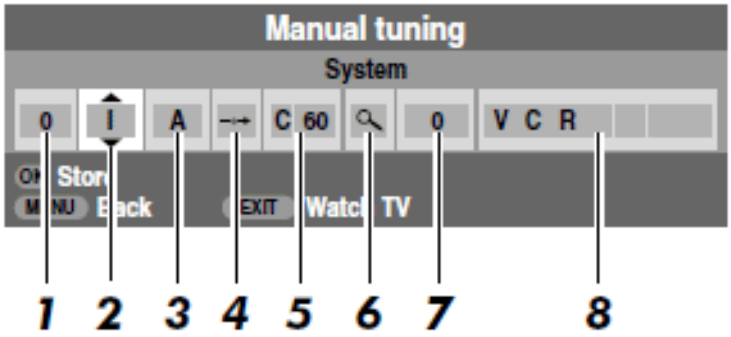
Repeat as necessary, then press (EXIT).

If the television cannot be connected to a media recorder/decoder with a SCART lead or if a station on another ***system*** is required, use **Manual tuning** to allocate a programme position.

Manual Tune

The television can be tuned-in manually using **Manual tuning**. For example: if the television cannot be connected to a media recorder/decoder with a SCART lead or to tune-in a station on another **System**.

Use ◁ and ▷ to move across the screen and select any of these Manual Tune options.



1 **Programme:**
The number to be pressed on the remote control.

2 **System:**
Specific to certain areas.

3 **Colour system:**
Factory set to Auto, should only be changed if problems are experienced, i.e. NTSC input from external source.

4 **Programme skip:**
👁→ means nothing has been stored or the facility to skip the channel is ON.

5 **Channel:**
The channel number on which a station is being broadcast.

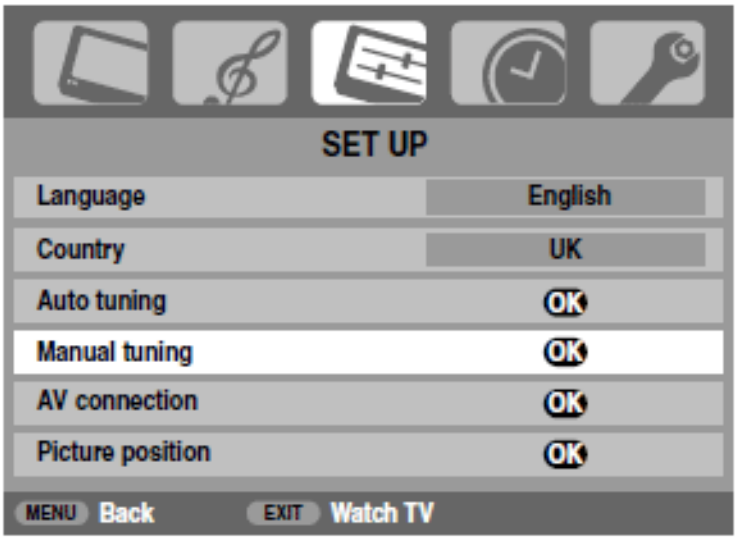
6 **Search:**
Search up and down for a signal.

7 **Manual fine tuning:**
Only used if interference/weak signal is experienced.

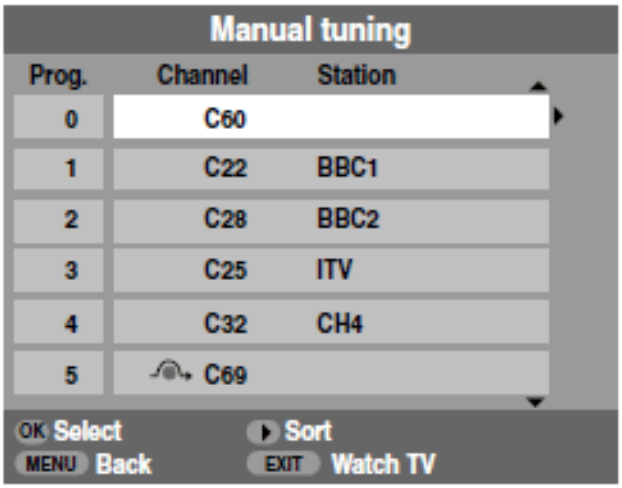
8 **Station:**
Station identification. Use the P▲ or P▼ and ◁ or ▷ buttons to enter up to seven characters.

To allocate a programme position on the television for a decoder and media recorder: turn the decoder on, insert a pre-recorded film in the media recorder and press PLAY, then manually tune.

1 Press (MENU) and using ◁ or ▷ select the **SET UP** menu, with P▼ highlight **Manual tuning**, press (OK) to select.



2 Use P▲ or P▼ to highlight the programme position required e.g. we suggest ***Prog. 0*** for a media recorder.



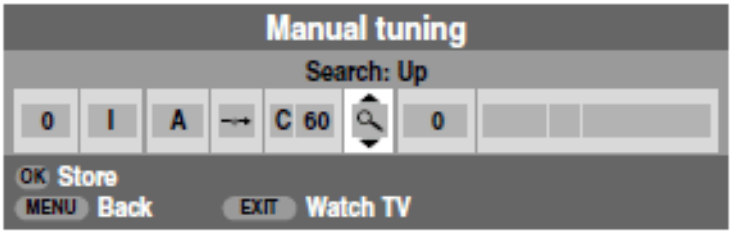
Different **Channel** numbers may be displayed.

3 Press (OK) to select. If the programme is skipped, **Programme skip** must be removed before storing.

4 Press ∓ to select **System** and use P▲ or P▼ to change if required.

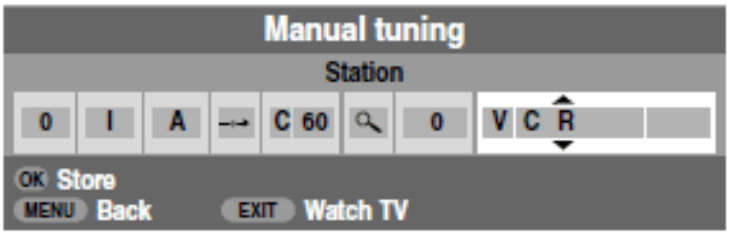
5 Then press ∓ to select **Search**.

6 Press P▲ or P▼ to begin the search. The search symbol will flash.



7 Each signal will show on the television, if it is not your media recorder, press P▲ or P▼ again to restart the search.

8 When your media recorder signal is found, press ◁+ to move along to **Station**. With P▲, P▼, ◁− and ◁+ put in the required characters, *e.g.* **VCR**.



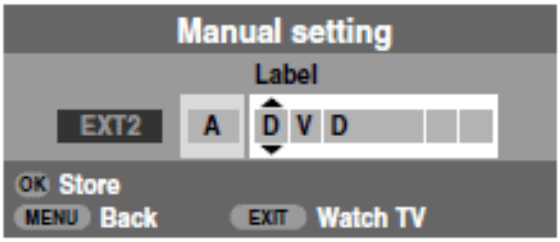
9 Press (OK) to store.

10 Repeat for each ***programme position*** you want to tune or, press (MENU) to return to the list of channels and select the next number to tune.

11 Press (EXIT) when you have finished.

12 To name external equipment, *e.g.* DVD on EXT2, press ⊖ to select ⊖2, then select **Manual setting** from the **SET UP** menu.

13 Press ◁+ to select **Label** then using P▲, P▼, ◁− and ◁+ put in the required characters.

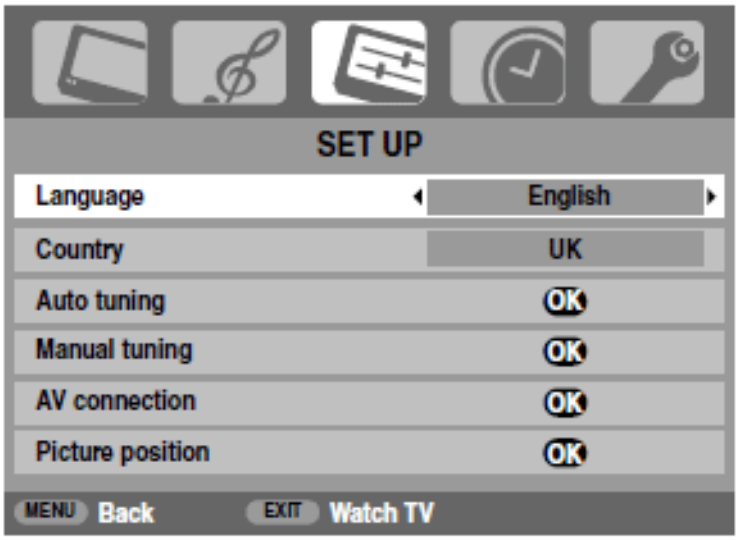


PLEASE NOTE

This television has direct channel entry if the channel numbers are known.
Select the **Manual tuning** screen in ***Step 3***. Enter the **Programme number**, the **System**, then the **Channel** number. Press (OK) to store.

Using Auto Tuning

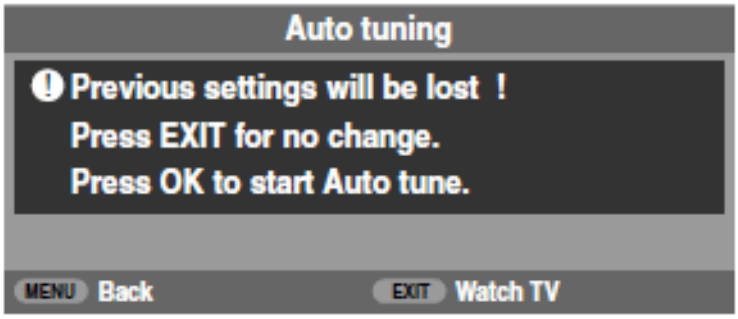
1 To set up the television using **Auto tuning**, press MENU and use ◁ or ▷ to select the **SET UP** menu.



2 Press P▼ to highlight **Language** and ◁ or ▷ to select.

3 Using P▼ highlight **Country**, then ◁ or ▷ to select. The television will now tune the stations for your country.

4 Press P▼ to highlight **Auto tuning**, then press OK.



5 To start **Auto tuning** press OK.

You must allow the television to complete the search.

When the search is complete the television will automatically select programme position 1. This may not be a clear picture, so the station order can be changed using **Manual tuning**.

SPECIFICATION

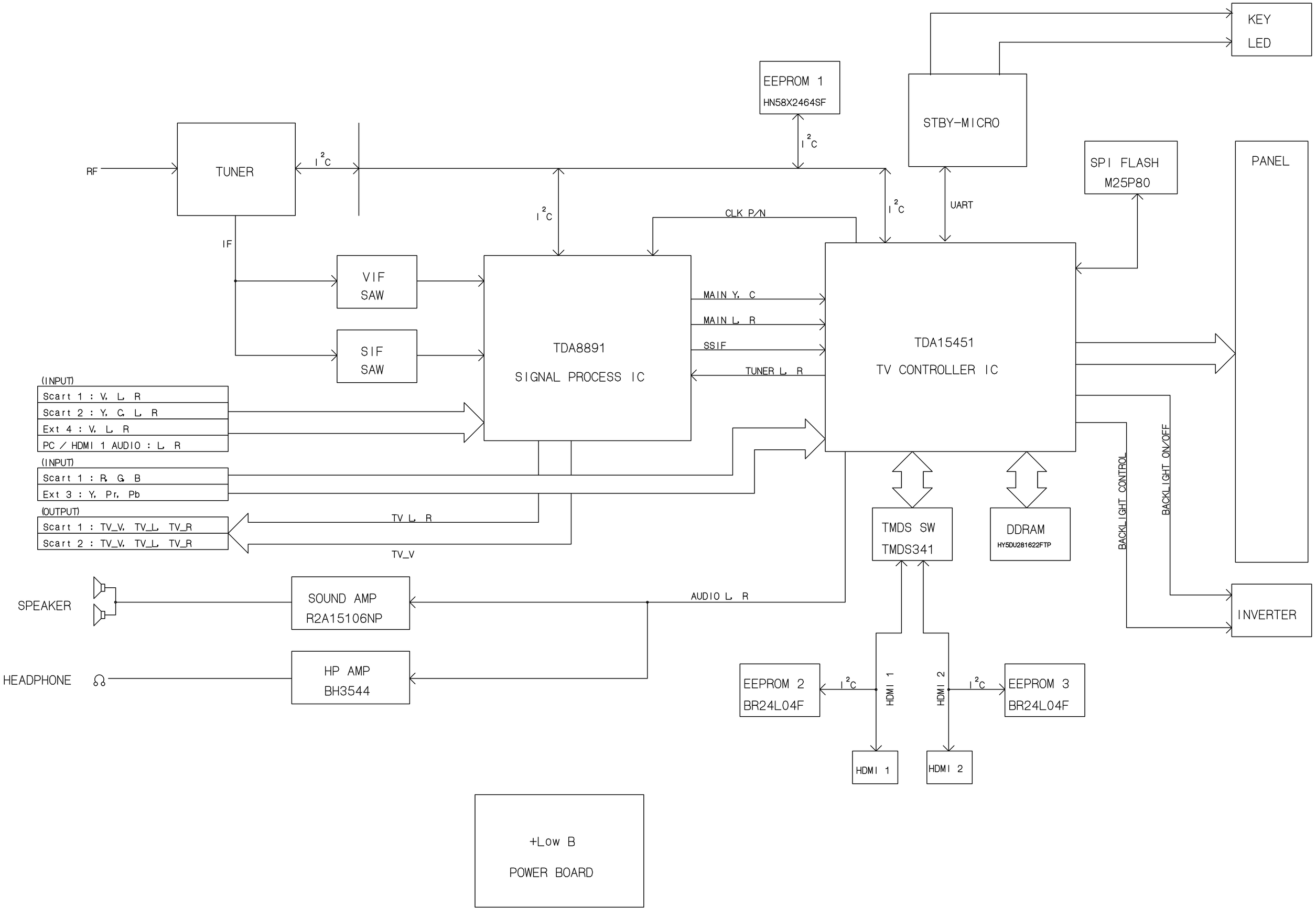
Broadcast systems/channels

PAL-I	UHF UK21-UK69
PAL-B/G	UHF E21-E69 VHF E2-E12, S1-S41
SECAM-L	UHF F21-F69 VHF F1-F10, B-Q
SECAM-D/K	UHF R21-R69 VHF R1-R12
Video Input	PAL, SECAM, NTSC 3.58/4.43

External connections

EXT1	Input	21-pin SCART	RGB, A/V
EXT2	Input	21-pin SCART	A/V, S-video
EXT3	Input	Phono jacks Phono jacks	Y, P_B/C_B, P_R/C_R Audio L + R
EXT4	Input	Phono jack Phono jacks	Video Audio L + R
HDMI 1/2	Input	HDMI™	
HDMI1 Audio		Phono jacks	Audio L + R

Stereo		Nicam 2 carrier system	
Visible Screen Size (approx.)	Model	32 37 42	80cm 94cm 107cm
Display		16:9	
Sound output (at 10% distortion)		Main 10W + 10W	
Power consumption as specified in EN60107-1 : 1997	Model	32 37 42	137W 164W 215W
Standby (approx.)	Model	32 37 42	0.9W 0.9W 0.9W
Dimensions (approx.)	Model	32 37 42	55cm (H) 80cm (W) 22cm (D) 62cm (H) 91cm (W) 25cm (D) 68cm (H) 101cm (W) 26cm (D)
		(Height dimension includes foot stand)	
Weight (approx.)	Model	32 37 42	14.3kg 17.5kg 22.0kg
Headphone socket		3.5mm stereo	
Accessories		Remote control 2 batteries (AAA, IEC R03 1.5V)	


KEY
LED
EEPROM 1
HN58X2464SF
STBY-MICRO
SPI FLASH
M25P80
PANEL
RF
TUNER
I2C
I2C
I2C
I2C
UART
CLK P/N
IF
VIF
SAW
SIF
SAW
TDA8891
SIGNAL PROCESS IC
MAIN Y, C
MAIN L, R
SSIF
TUNER L, R
TDA15451
TV CONTROLLER IC
(INPUT)
Scart 1 : V, L, R
Scart 2 : Y, C, L, R
Ext 4 : V, L, R
PC / HDMI 1 AUDIO : L, R
(INPUT)
Scart 1 : R, G, B
Ext 3 : Y, Pr, Pb
(OUTPUT)
Scart 1 : TV_V, TV_L, TV_R
Scart 2 : TV_V, TV_L, TV_R
TV L, R
TV_V
TMDS SW
TMDS341
DDRAM
HY5DU281622FTP
BACKLIGHT CONTROL
BACKLIGHT ON/OFF
INVERTER
SPEAKER
SOUND AMP
R2A15106NP
AUDIO L, R
HEADPHONE
HP AMP
BH3544
EEPROM 2
BR24L04F
I2C
HDMI 1
HDMI 2
I2C
EEPROM 3
BR24L04F
HDMI 1
HDMI 2
+Low B
POWER BOARD

GND 1 >>>> MEMORY GND
GND 3 >>>> LVDS GND
GND D >>>> TMDS GND
GND >>>> CHASIS GND

QA100
TV Controller IC
TDA15471

QA103
CMOS DDR Syuchronous DRAMC

TO U03A POWER [1]
CONNECTOR PE05131
P803B → P803A

TO U03A POWER [1]
CONNECTOR PE05131
P806B → P806A

U01AS SIGNAL [5] LOC_TOP (PE0484)

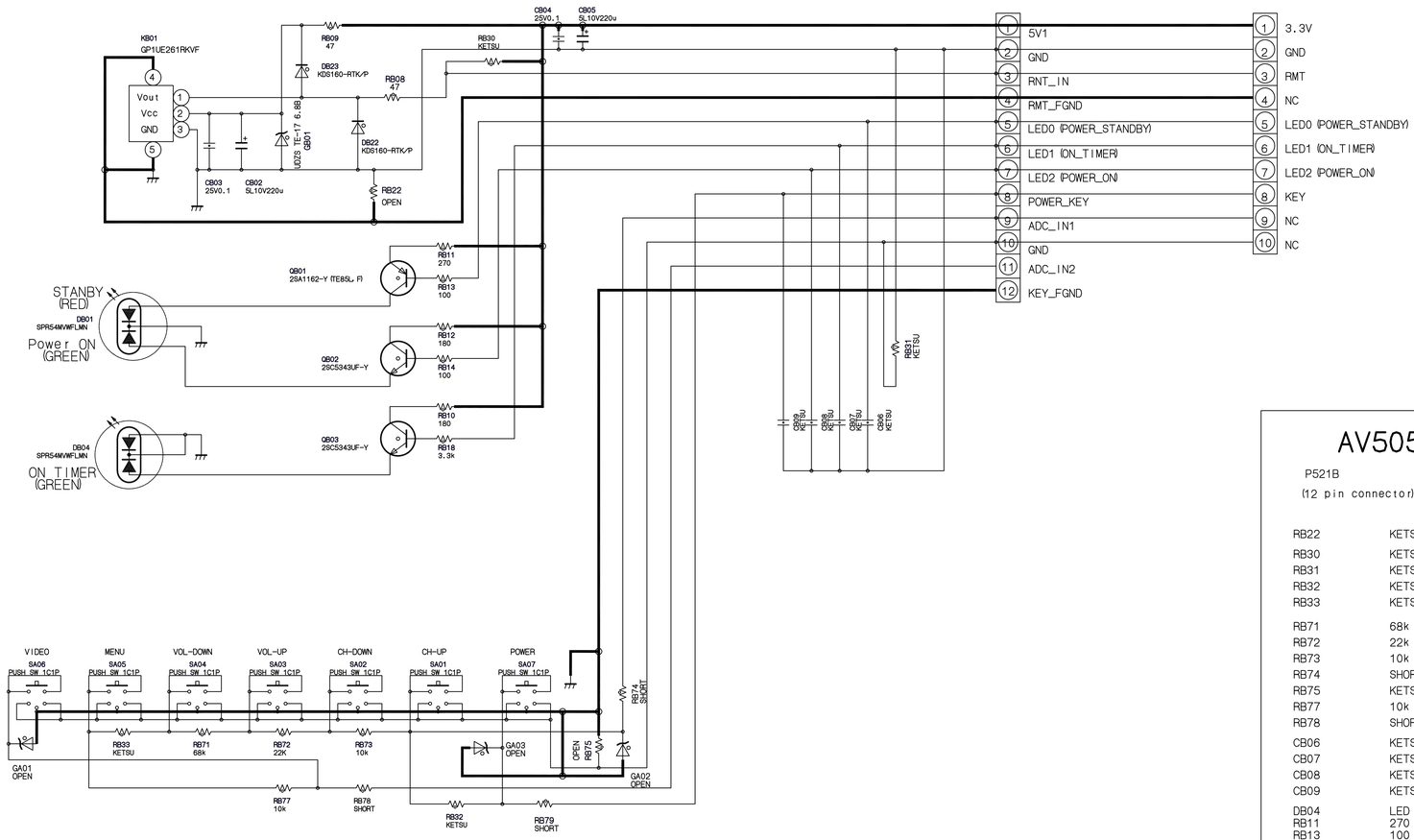
for AV505D SERIES

AV505D AV500

TO U01AS SIGNAL [3]

Tuner/IF/AV Switch/STB Micon (PE0484)

PC01A → PC01B



	AV505D	AV500
	P521B (12 pin connector)	PC01A (8 pin connector)
RB22	KETSU	SHORT
RB30	KETSU	KETSU
RB31	KETSU	SHORT
RB32	KETSU	1.3k
RB33	KETSU	6.2k
RB71	68k	3.6k
RB72	22k	2.7k
RB73	10k	1.8k
RB74	SHORT	KETSU
RB75	KETSU	SHORT
RB77	10k	11k
RB78	SHORT	KETSU
CB06	KETSU	KETSU
CB07	KETSU	KETSU
CB08	KETSU	KETSU
CB09	KETSU	KETSU
DB04	LED	KETSU
RB11	270	180
RB13	100	1.5k

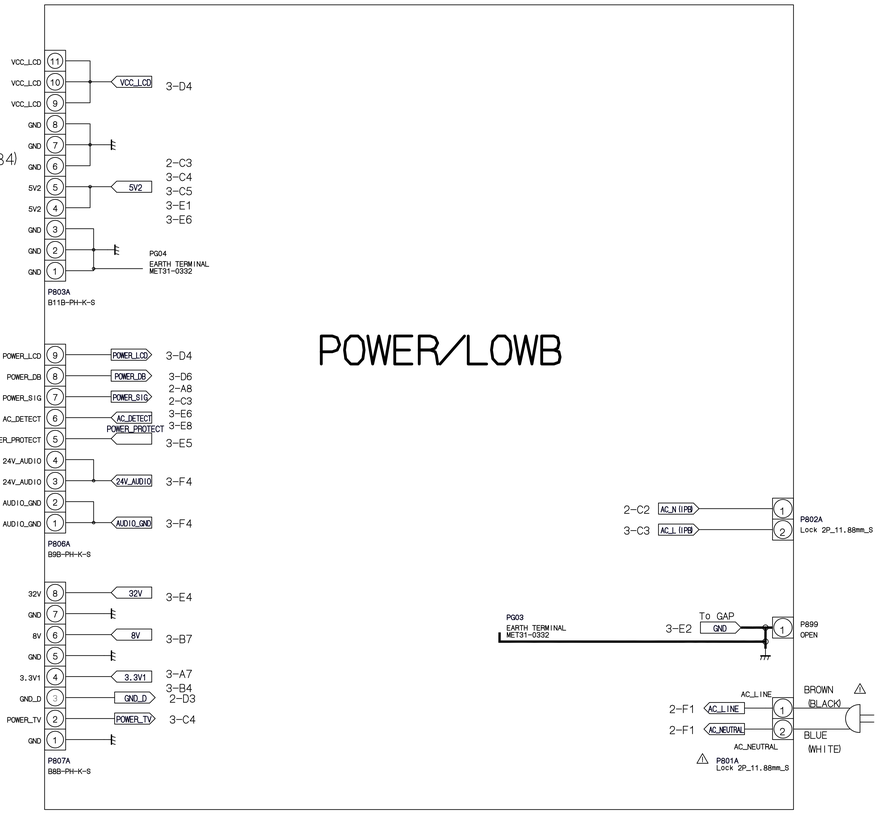
U02A KEY/RMT/LED [1] KEY & LED (PE0486)

POWER/LOWB

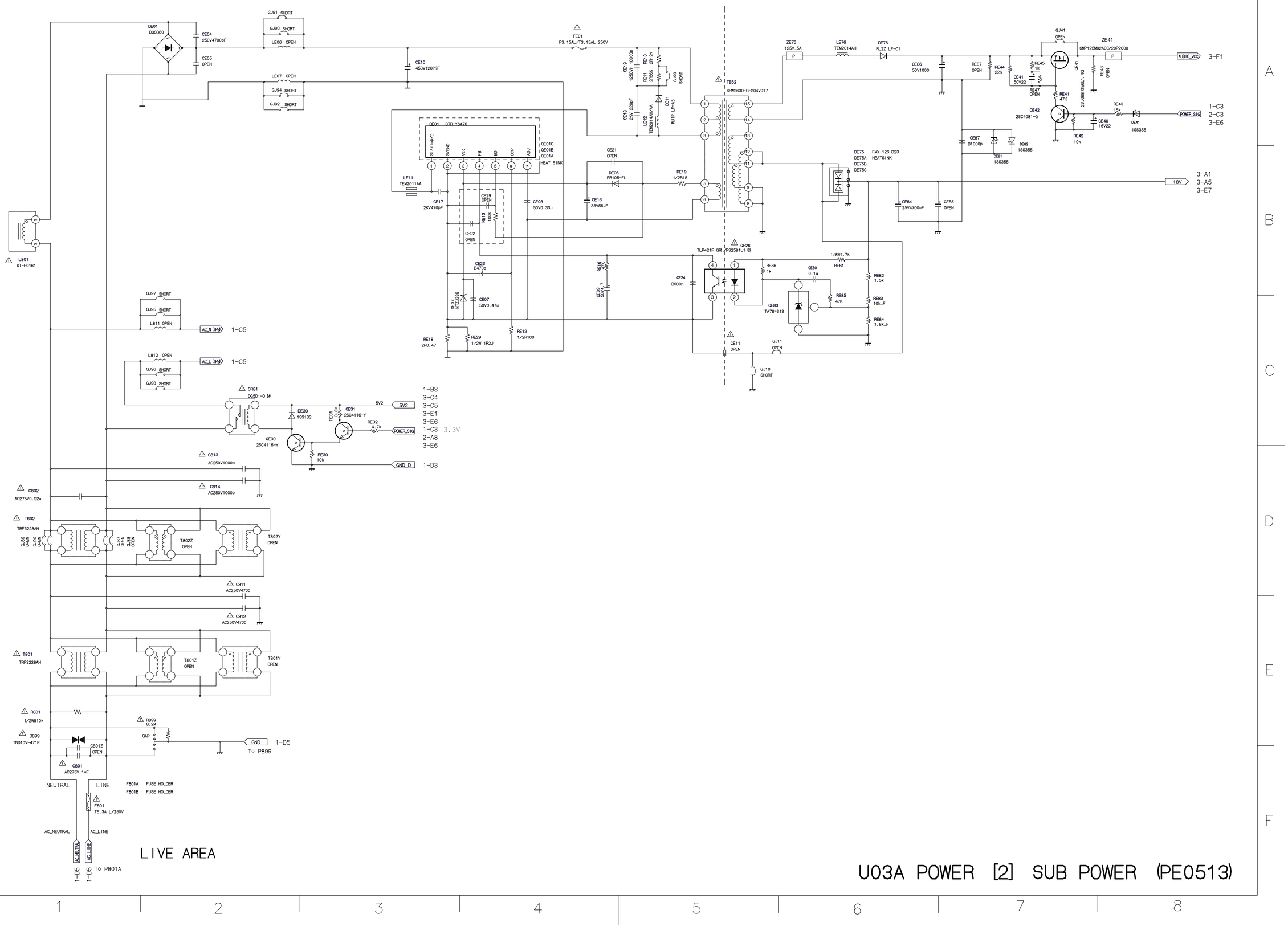
TO U01AS SIGNAL [5] LOC_TOP (PE0484)
P803B ← P803A

TO U01AS SIGNAL [5] LOC_TOP (PE0484)
P806B ← P806A

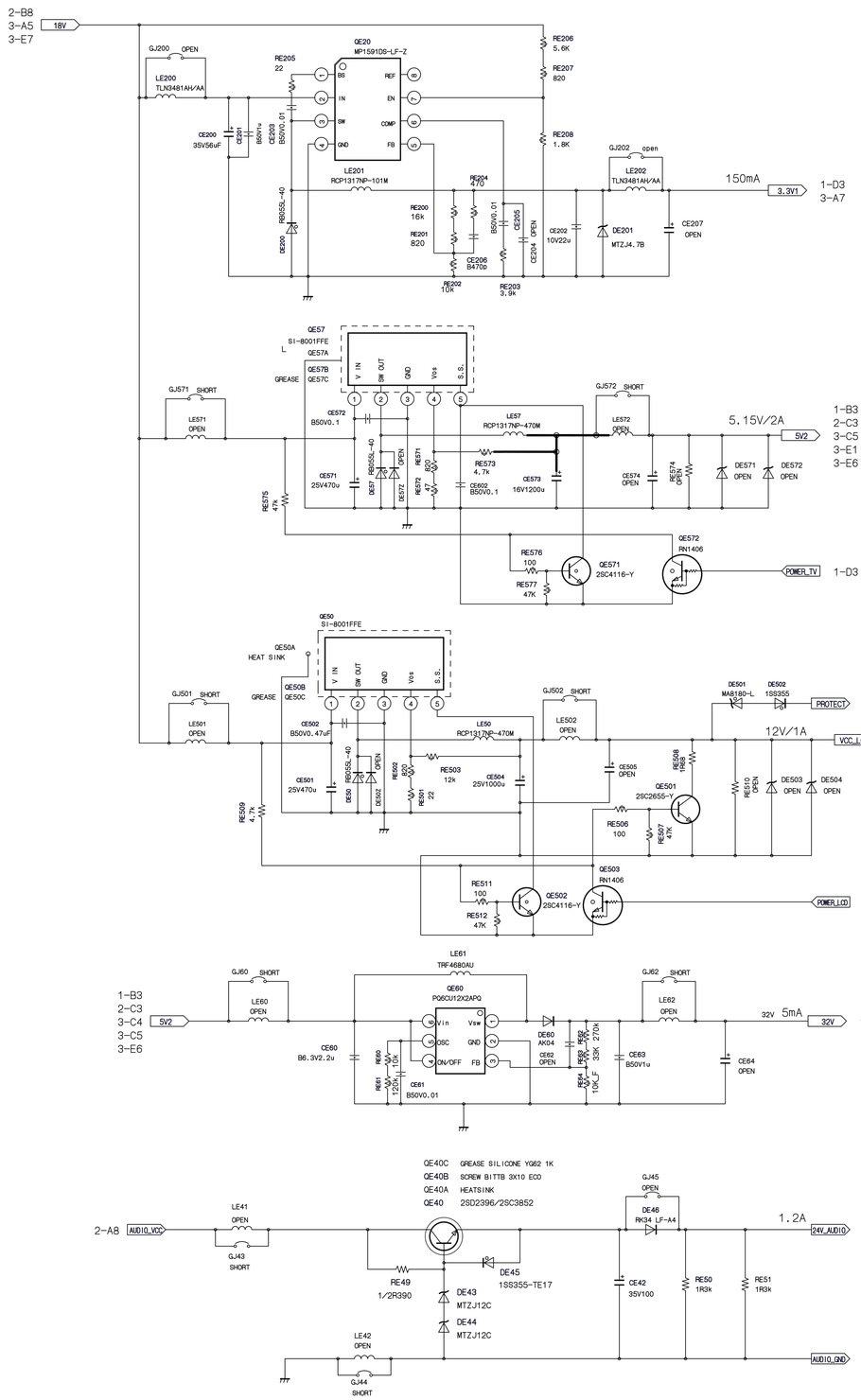
TO U01AS SIGNAL [3]
Tuner/IF/AV Switch/STB Micon (PE0484)
P807B ← P807A

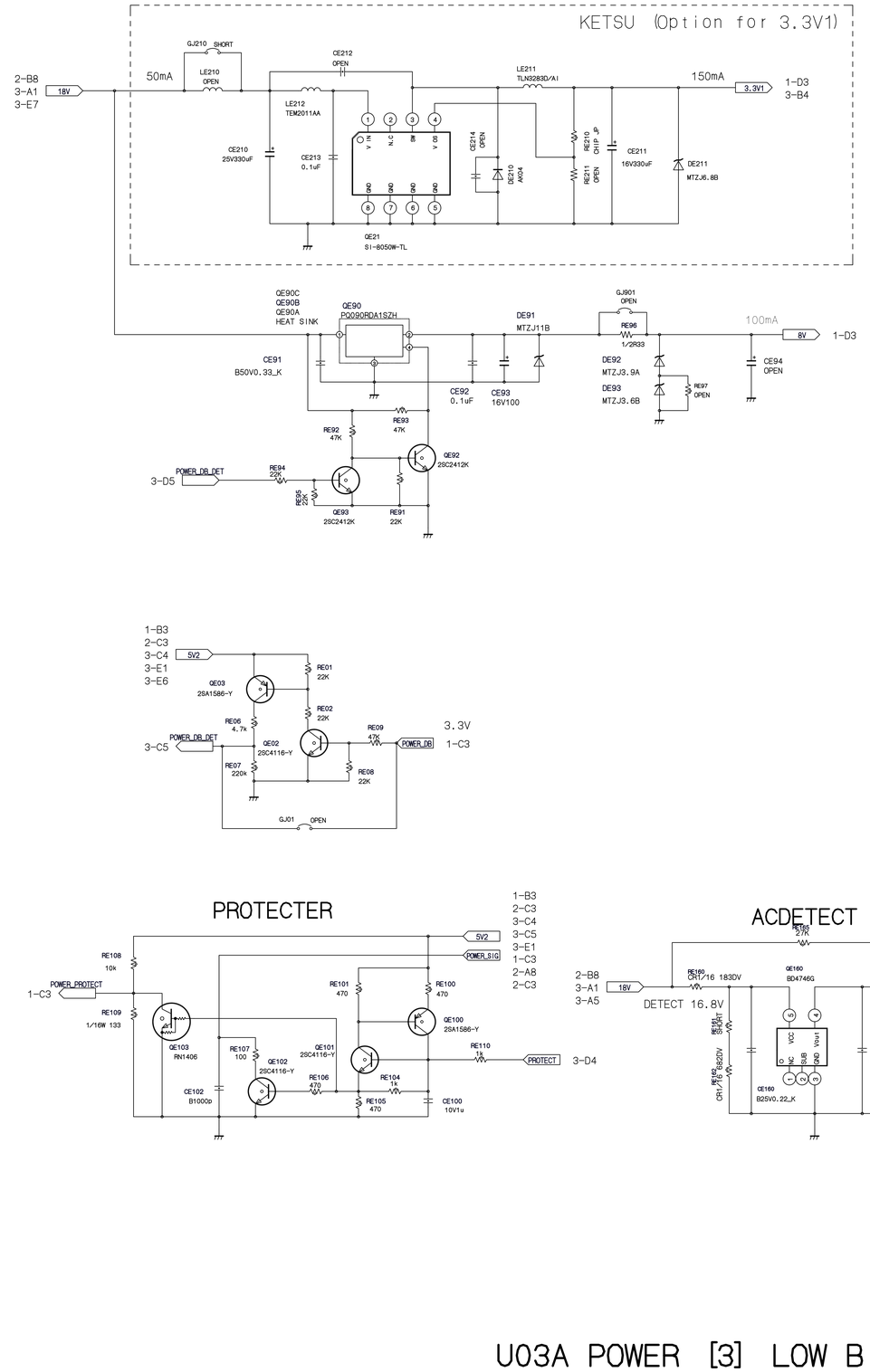


U03A POWER [1] CONNECTOR (PE0513)



U03A POWER [2] SUB POWER (PE0513)





U03A POWER [3] LOW B (PE0513)

Europe AV IN LInk

Scart 1
Full Scart

21	SHIELD GND
20	CVBS/Y IN
19	VIDEO OUT
18	CVBS/Y IN RETURN
17	VIDEO OUT RETURN
16	RGB BLANKING
15	R(C) IN
14	BLANKING RETURN
13	RED(C) RETURN
12	NC
11	GREEN IN
10	NC
9	GREEN RETURN
8	SLOW SW TCHING
7	B(C) IN
6	AUDIO IN (L)
5	BLUE RETURN
4	AUDIO EARTH
3	AUDIO OUT (L)
2	AUDIO IN (R)
1	AUDIO OUT (R)

Scart 2
CVBS/YC

21	SHIELD GND
20	CVBS/Y IN
19	VIDEO OUT
18	CVBS/Y IN RETURN
17	VIDEO OUT RETURN
16	NC
15	SC IN
14	GND
13	SC IN RETURN
12	NC
11	NC
10	DATA 2
9	DATA 2 RETURN
8	SLOW SW TCHING
7	NC
6	AUDIO IN (L)
5	NC
4	AUDIO EARTH
3	AUDIO OUT (L)
2	AUDIO IN (R)
1	AUDIO OUT (R)

E4
PC/HDMI AUDIO IN
E3 Colour Stream 1

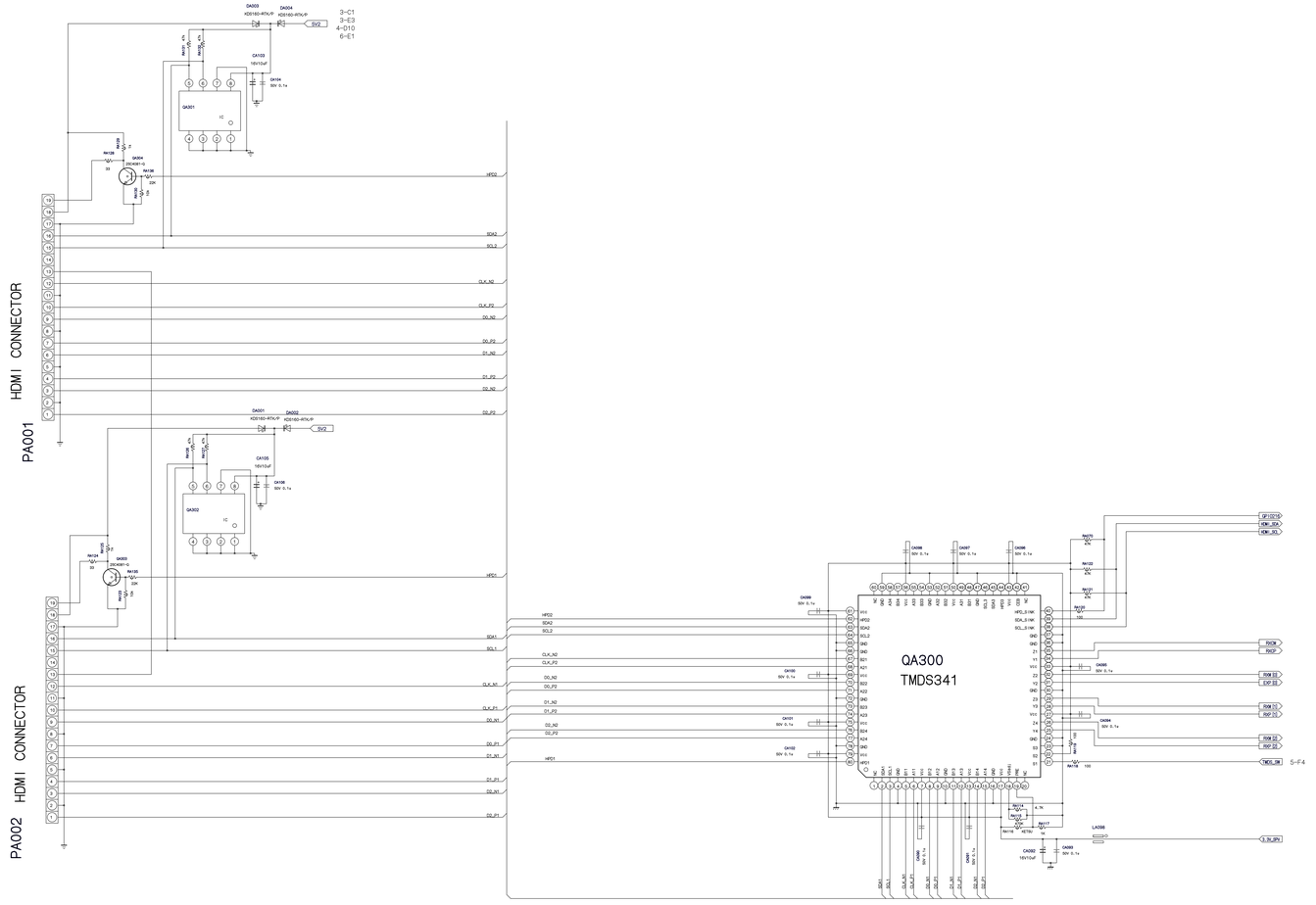
V21A00007500
PVQ05
AV JACK

To Sheet 3

For Asia model

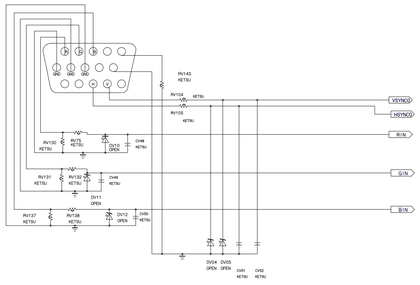
U01AS SIGNAL [1] EUROPE AV (PE0484)

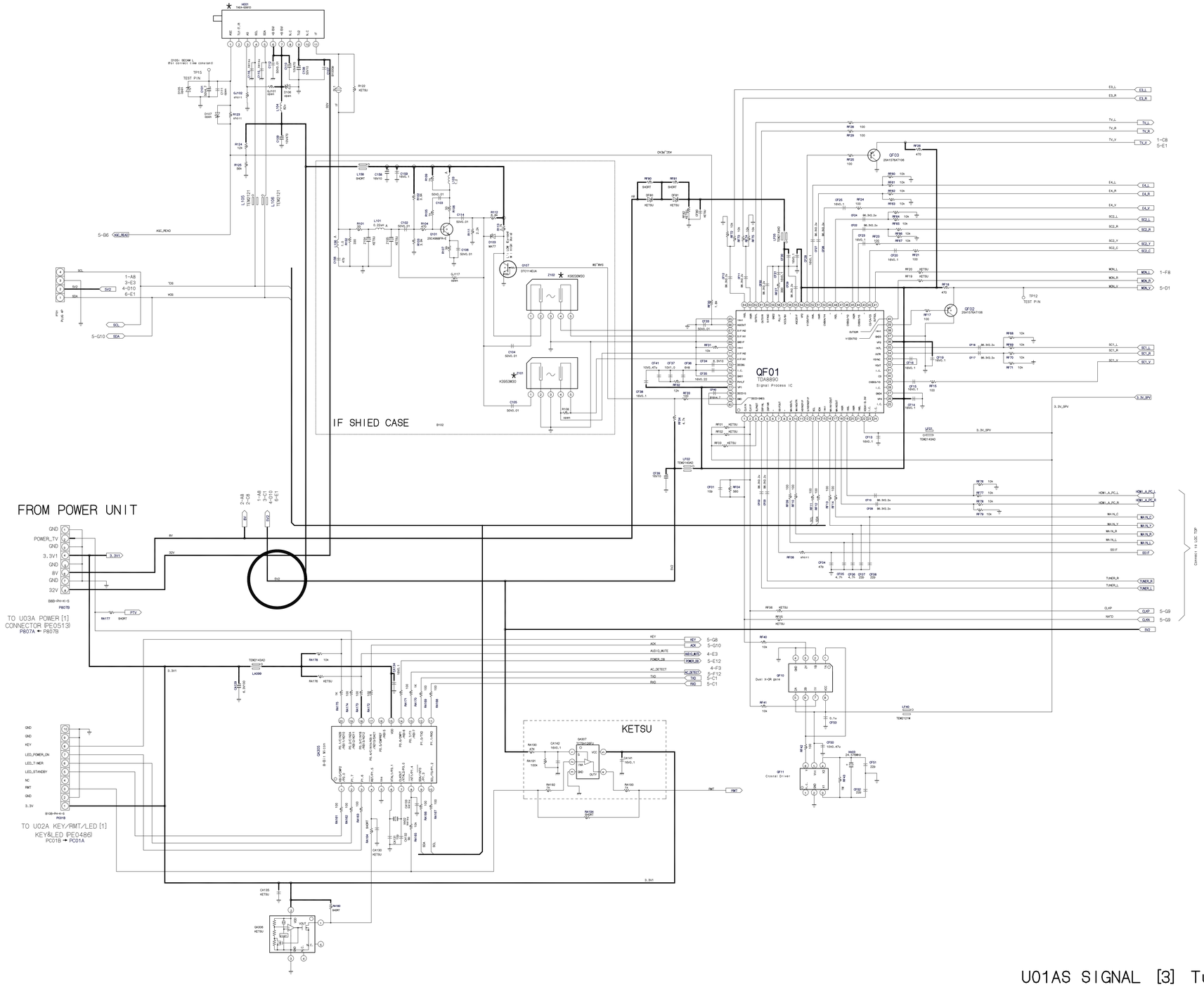
HDMI / PC INPUT

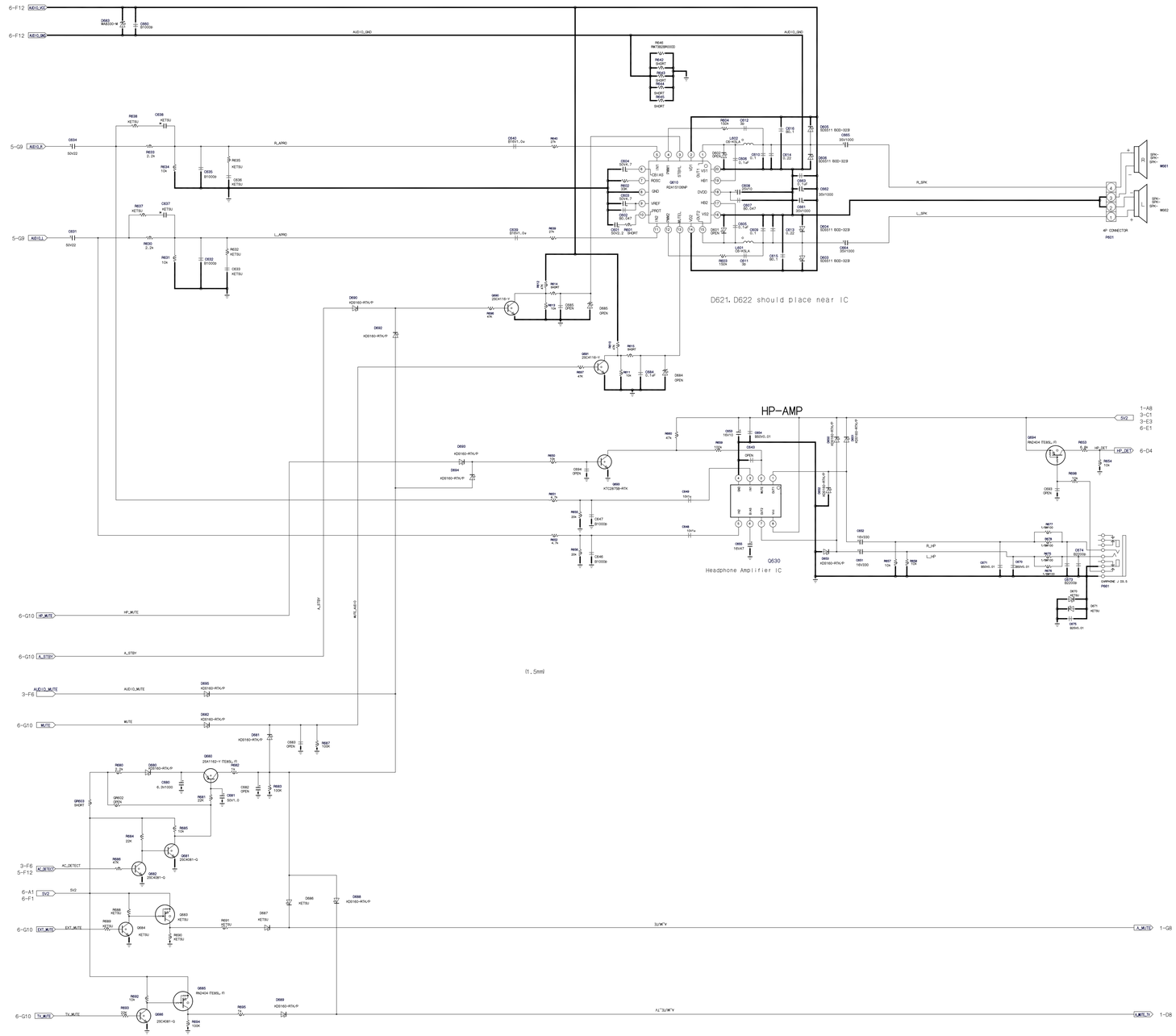


PV01

PC-DSUB KETSU

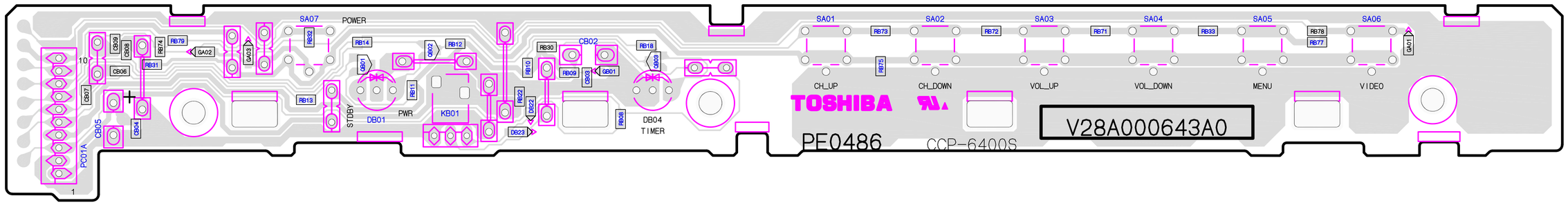



IF SHIED CASE
FROM POWER UNIT
TO U03A POWER [1]
CONNECTOR (PE0513)
P807A ➔ P807B
TO U02A KEY/RMT/LED [1]
KEY&LED (PE0486)
PC01B ➔ PC01A
QF01
TDA8890
Signal Process IC
KETSU
Connect to UDC TOP
U01AS SIGNAL [3] Tuner/IF/AV Switch/STB Micon (PE0484)

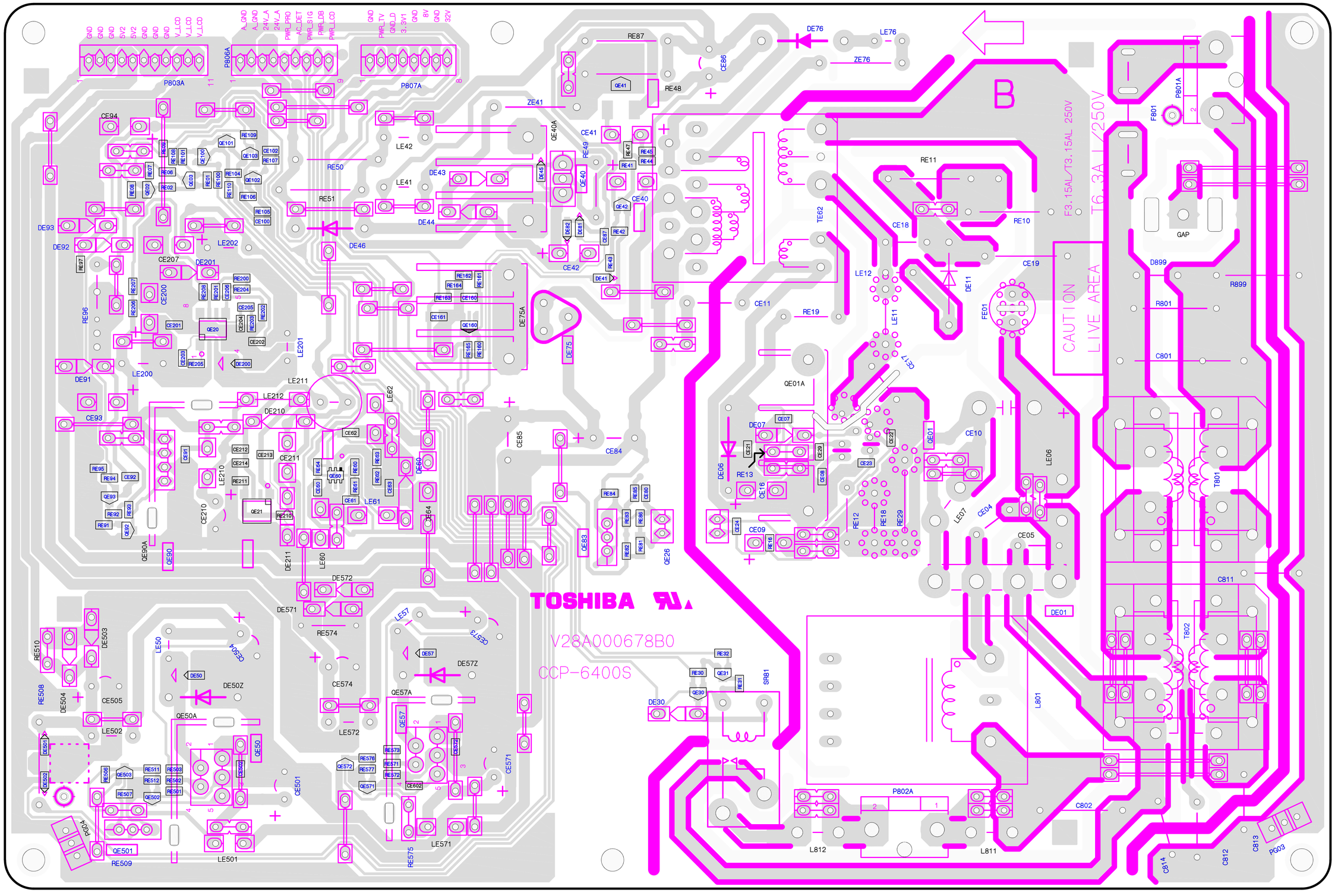


U01AS SIGNAL [4] HP / Class- D Audio (PE0484)

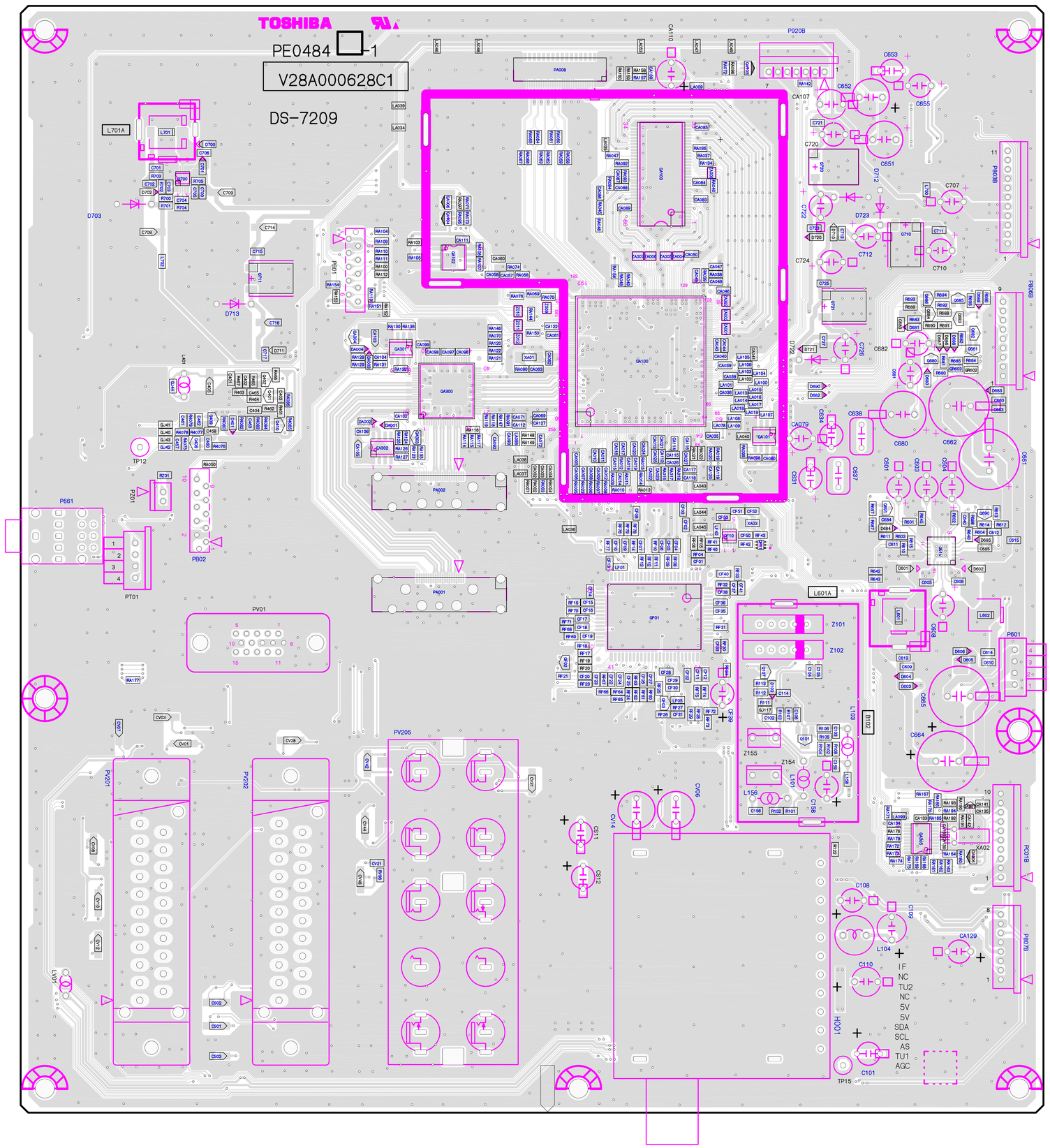
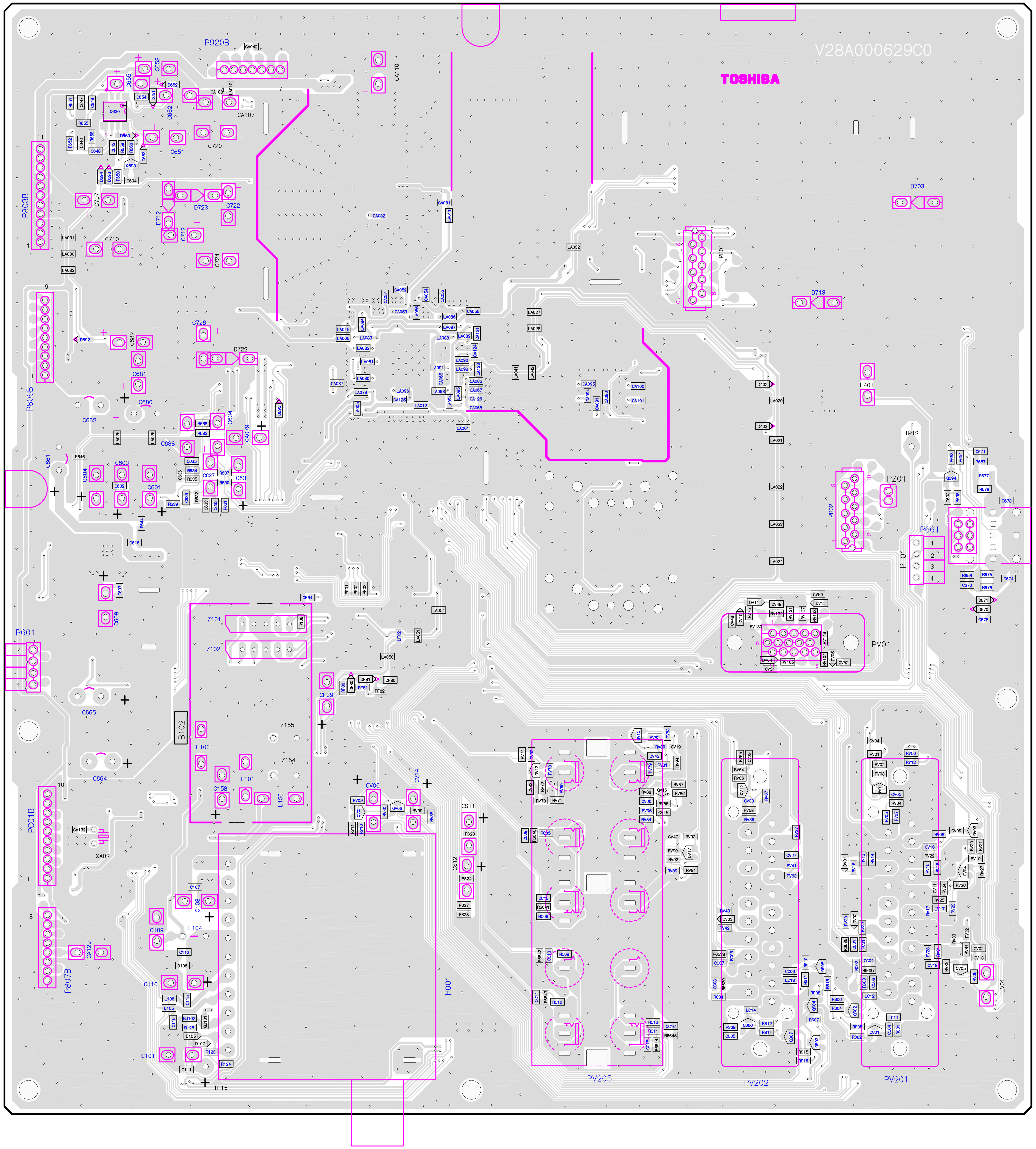
U02A KEY/RMT/LED [Bottom] (PE0486)



U03A POWER [Bottom] (PE0513)



U01AS SIGNAL [Top] (PE0484)



U01AS SIGNAL [Bottom] (PE0484)